

APPENDIX A

SURVEY FORM



The following information will be used to help us categorize and predict future boating interest and participation.
This information will not be associated with your name.

24. What is your **age**?
☐ 16-25 ☐ 56-65
☐ 26-35 ☐ 56-65
☐ 36-45 ☐ 76-85 (or older)
☐ 46-55
25. Are you ☐ Male or ☐ Female?
26. What is your current **marital status**?
☐ **vplvv** ☐ Single ☐ Married ☐ Di-
27. What is the **number of persons in your household** (including yourself) with the following age range:
___ 0-10 ___ 31-40 ___ 61-70
___ 11-20 ___ 41-50 ___ 71-80 (or older)
___ 21-30 ___ 51-60
28. What is your **employment status**?
☐ Full-time ☐ Unemployed or student
☐ Part-time ☐ Retired
29. What is your **total annual household income before taxes**?
☐ \$20,000 or less ☐ 51,000 to 60,000 ☐ 81,000 to 90,000 ☐ 111,000 to 120,000
☐ 21,000 to 30,000 ☐ 61,000 to 70,000 ☐ 91,000 to 100,000 ☐ 121,000 to 130,000
☐ 31,000 to 40,000 ☐ 71,000 to 80,000 ☐ 101,000 to 110,000 ☐ 130,000 and above
☐ 41,000 to 50,000

If we require more information, may we contact you? ☐ No ☐ Yes

Name: Telephone No:

Do you have any additional comments? What do you consider to be the most important issues facing New Jersey boaters?



For further information about the Marine Trades Association of New Jersey,
please visit us online at <http://www.mtanj.org>



NEW JERSEY BOATING SURVEY



Where is your **primary residence**:

Town: County: State:

1. Please indicate the **Percent** of your **2006 boat trips** that were made in the following states:

NJ %	DE %	NC %	FL %
NY %	PA %	SC %	MA %
MD %	VA %	Other %	Other %

2. How many boats do you currently have
registered in New Jersey?

boats

3. How many of these boats did you
purchase in New Jersey?

boats

4. Please indicate the **number of boats** registered in your name and the **percentage of trips** that you took in
New Jersey during **2006** on each **boat type**: (Note: The percentages should add up to 100%)

Powerboat (less than 26 feet in length) # %	Sailboat (less than 26 feet in length) # %	Jetski/Waverunner # %
Powerboat (greater than 26 feet in length) # %	Sailboat (greater than 26 feet in length) # %	Other (rowboat/canoe) Please Specify # %

5. How many boat trips did you take (total) in
New Jersey in **2006**?
(Include trips on all of
your boats)

trips

6. How many of these outings were **overnight**
trips in **New Jersey**?

overnight
trips

*For the rest of the questions, please only answer for the boat type
that you used **most frequently** in **New Jersey** during **2006**.*

7. What is the **year, make and model** of the boat that you used **most frequently** in **2006**?

Year: Make: Model:

8. Did you **purchase** this boat in **New Jersey**
in **2006**?

Yes ☐
No ☐

9. If you purchased this boat in **New Jersey**
in 2006, did you purchase it:

New from a dealer ☐
Used from a dealer ☐
From an individual ☐

10. Where do you keep the boat you use **most frequently** during the **boating season**?

In water at PRIVATE RESIDENCE☐

Dry dock at MARINA☐

Out of water at PRIVATE RESIDENCE☐

In water at MARINA☐

11. Please provide the **location** of where this boat is kept during the **boating season**:

Town:

County:

State:

12. Where do you keep the boat you used **most frequently** during the **off season**?

Marina☐

Private residence☐

13. How do you gain **access** to New Jersey waters with the boat that you use **most frequently**?

Private dock or mooring☐

Marina☐

Launch ramp☐

14. What is the **average distance** you travel (one-way) by vehicle to gain access to New Jersey waters?

miles

15. What **type of vehicle** do you use to gain access to New Jersey waters?

Car☐

None☐

Specify:

SUV/Truck☐

Other☐

16. Please indicate the **percentage of trips** that were made in the following **types of waterbodies** with the boat you used **most frequently** in 2006 (Note: The percentages should add up to 100%):

Along East Coast

%

Bays

%

Tidal Rivers

%

Offshore

%

Lakes

%

Freshwater Rivers

%

17. What was the **primary purpose** of your 2006 boat outings? (please indicate the percentage for each activity; Note: The percentages should add up to 100%):

Fishing

%

Cruising

%

Swimming/Skiing

%

Other (specify)

%

18. **How many people** typically participated in your 2005 boat outings?

people

19. Who was typically on the boat?

☐ Children/Grandchildren

☐ Friends

☐ Other

☐ Husband/Wife

☐ Other/Relatives

20. What **3 New Jersey Destination Areas** did you travel to most frequently in **2006**? (Note: Please provide the waterbody name, county and number of trips made in 2006)

Waterbody Name

County:

of Trips:

Waterbody Name

County:

of Trips:

Waterbody Name

County:

of Trips:

22. Please estimate your expenses on a **single TYPCIAL OUTING** during **2006** in **New Jersey** for the boat you use **most frequently**:

Fuel for transportation to launch site (car or truck)

Restaurant meals/drinks

Boat fuel Diesel: Gasoline:

Groceries

Boat accessories (ropes, charts, cleaning supplies, etc.)

Overnight lodging (including overnight docking at marinas)

Fishing supplies (bait, tackle, etc.)

Shopping/souvenirs

Launch fees

Entertainment

Temporary docking

Other

23. Please estimate your **ANNUAL Boat Related Expenses** in **New Jersey** during **2006** for the boat you use **most frequently**:

Seasonal slip/mooring rental

New and/or replacement electronics

Winterization and off-season storage

New and/or replacement sails/rigging

Put-in/haul-out charges

Boating clothing (e.g., foul weather gear)

Boat and/or towing insurance

Fishing equipment (rods, reels, nets, lures, etc.)

Taxes/registration fees

Water skiing equipment

Purchase of boat

Scuba diving equipment

Annual boat loan payment (not including above)

Other boating supplies (e.g., paddles, life vests, coolers, etc.)

Hull repair

Race/Regatta/tournament fees

Bottom paint

Boat club/association dues

Engine maintenance repair

Boater education/instruction (Boat safety, etc.)

Electronic/electrical repair

Boating magazines/publications

Trailer maintenance/repair

Other

Continued on back

APPENDIX B

SURVEY DESIGN AND DATA ANALYSIS



The following sections present the results and methodology used to gather and evaluate the data for the economic analysis of New Jersey's recreational boating industry.

1.0 RESULTS

Table 1-1:

Question 1: Please indicate the percent of your 2006 boat trips that were made in the following states:

State	Frequency of Responses	Average (Percent)	StdErr	95% CI	
				Lower Bound	Upper Bound
New Jersey	967	91.00	0.84	89.35	92.66
Delaware	967	0.38	0.10	0.18	0.59
North Carolina	967	0.34	0.22	-0.09	0.77
Florida	967	0.38	0.07	0.25	0.52
New York	967	3.66	0.52	2.64	4.69
Pennsylvania	967	2.05	0.43	1.21	2.90
South Carolina	967	0.02	0.01	0.00	0.04
Maine	967	0.51	0.27	-0.03	1.04
Maryland	967	0.84	0.27	0.31	1.37
Virginia	967	0.39	0.15	0.08	0.69
Other	967	0.43	0.30	-0.15	1.00

Respondents were asked to indicate their frequency of trips to the above destinations using percentages. 967 out of 1,078 respondents provided useable responses to this question. The average of respondent provided percentages are displayed in table 1-1. Based on the pattern of responses in the survey, 91 ± 1.7 percent of trips taken by New Jersey boaters were made in New Jersey. The states of New York and Pennsylvania were the second and third most visited states respectively. The states of North Carolina, Maine and the "Other" category had very few non zero entries resulting in relatively large standard errors. The large standard error causes the width of the 95 percent confidence interval to exceed the lower limit value of zero. Estimates from these state categories are unreliable.

Table 1-2:

Question 2: How many boats do you currently have registered in New Jersey?

Statistic	Frequency of Responses	Estimate	StdErr	95% CI	
				Lower Bound	Upper Bound
Total	1,068	177,064	1,310	174,493	179,635
Average	1,068	1.20	0.01	1.18	1.21

Respondents were asked to indicate the number of boats that they have registered in New Jersey. 1,068 out of 1,078 respondents provided useable responses to this question. The estimated total number of boats and average number of boats per boater are displayed in table 1-2. Based on the pattern of responses in the survey, there are $177,064 \pm 2,571$ boats registered in New Jersey. The average number of boats per boater is 1.20 ± 0.02 .

Table 1-3:

Question 3: How many of these boats did you purchase in New Jersey in 2006?

Statistic	Frequency of Responses	Estimate	StdErr	95% CI	
				Lower Bound	Upper Bound
Total	993	173,719	2,301	169,203	178,235
Average	993	1.17	0.02	1.14	1.20

Of the boats registered in New Jersey, respondents were asked to indicate the number of these boats that they purchased in New Jersey. 993 out of 1,078 respondents provided useable responses to this question. The estimated total number of boats and average number of boats per boater are displayed in table 1-3. Based on the pattern of responses in the survey, New Jersey boaters purchased $173,719 \pm 4,516$ boats in New Jersey. The average number of boats purchased in New Jersey per boater is 1.17 ± 0.03 .

Table 1-4a:
Question 4: Please indicate the number and type of boats registered in your name in New Jersey during 2006:

Boat Category	Frequency of Responses	Total	StdErr	95% CI	
				Lower Bound	Upper Bound
Powerboat less than 26 feet in length	1,078	150,068	7,596	135,161	164,974
Powerboat 26 feet or greater in length	1,078	39,779	9,466	21,205	58,354
Rowboat/canoe/kayak	1,078	36,587	8,270	20,359	52,814
Jetski/Waverunner/PWC	1,078	20,185	2,452	15,375	24,996
Sailboat 26 feet or greater in length	1,078	12,910	9,432	-5,598	31,417
Sailboat less than 26 feet in length	1,078	11,892	2,306	7,367	16,418

Of the boats registered in New Jersey, respondents were asked to indicate the number of these boats that they purchased in New Jersey. 1,073 respondents directly provided information as to the number of boats they owned per category. Values for the 5 that did not provide information were imputed based on the model make that they identified in question 8. Please see imputation rules in Table 2-4 for an explanation as how missing values for these boat categories were imputed. The estimated total number of boats per boat category is displayed in table 1-4a. Based on the pattern of responses in the survey, New Jersey boaters were most likely to register a powerboat less than 26 feet with an estimated total number of these boats at $150,068 \pm 14,906$. Powerboats 26 feet or greater or non motorized boat craft such as rowboats, canoes and kayak are the next most frequently registered boats. Since the majority of responses for the boat category of “*sailboat 26 feet or greater in length*” consisted mainly of zero values, the standard error for the total estimate is relatively large. The lower bound for the confidence interval exceeds the lower limit of zero. The total estimate for this category is unreliable. The estimated total number of boats summed across all boat categories does not match the total in question 3 due to inconsistency in responses provided by the respondent.

Table 1-4b:
Question 4: Please indicate the number and type of boats registered in your name in New Jersey during 2006:

Boat Category	Frequency of Responses	Average	StdErr	95% CI	
				Lower Bound	Upper Bound
Powerboat less than 26 feet in length	1,078	1.01	0.05	0.91	1.11
Powerboat 26 feet or greater in length	1,078	0.27	0.06	0.14	0.39
Rowboat/canoe/kayak	1,078	0.25	0.06	0.14	0.36
Jetski/Waverunner/PWC	1,078	0.14	0.02	0.10	0.17
Sailboat 26 feet or greater in length	1,078	0.09	0.06	-0.04	0.21
Sailboat less than 26 feet in length	1,078	0.08	0.02	0.05	0.11

Of the boats registered in New Jersey, respondents were asked to indicate the number of these boats that they purchased in New Jersey. 1,073 respondents directly provided information as to the number of boats they owned per category. Values for the 5 that did not provide information were imputed based on the model make that they identified in question 8. Please see imputation rules in Table 2-4 for an explanation as how missing values for these boat categories were imputed. The estimated average number of boats per boat category is displayed in table 1-4b. Based on the pattern of responses in the survey, New Jersey boaters were most likely to register a powerboat less than 26 feet at an estimated average rate of $1.01 \pm .10$ boat per boater. Powerboats 26 feet or greater or non motorized boat craft such as rowboats, canoes and kayak are the next most frequently registered boats at estimated average rate of 0.27 and 0.25 registered boats per boater respectively. Since the majority of responses for the boat category of “*sailboat 26 feet or greater in length*” consisted mainly of zero values, the standard error for the average estimate is relatively large. The lower bound for the confidence interval exceeds the lower limit of zero. The average estimate for this category is unreliable.

Table 1-5:
Question 5: Please indicate what percentage of trips you took in New Jersey during 2006 on each boat type:

Boat Category	Frequency of Responses	Average (Percent)	StdErr	95% CI	
				Lower Bound	Upper Bound
Powerboat less than 26 feet in length	895	76.34	1.17	74.05	78.63
Powerboat 26 feet or greater in length	895	9.12	0.44	8.26	9.98
Rowboat/canoe/kayak	895	5.16	0.80	3.59	6.72
Jetski/Waverunner/PWC	895	4.72	0.72	3.30	6.14
Sailboat less than 26 feet in length	895	2.99	0.57	1.87	4.10
Sailboat 26 feet or greater in length	895	1.67	0.36	0.96	2.39

Respondents were asked to estimate their trip frequency by boat category based on percentages. 895 out of 1,078 respondents provided useable responses to this question. The average of respondent provided percentages are displayed in table 1-5. Based on the pattern of responses in the survey, New Jersey boaters were most likely to take a trip in *powerboats less than 26 feet in length* with an average percent of 76.3 ± 2.3 followed by *powerboats 26 feet or greater in length* at a rate of $9.1 \text{ percent} \pm 0.9$.

Table 1-6:
Question 6: How many boat trips did you take (total) in New Jersey in 2006?
(Include trips on all of your boats)

Statistic	Frequency of Responses	Estimate	StdErr	95% CI	
				Lower Bound	Upper Bound
Total	1,003	4,159,276	220,015	3,727,499	4,591,052
Average	1,003	28.10	1.49	25.19	31.02

Respondents were asked to indicate the number of trips taken in New Jersey in 2006. 1,003 out of 1,078 respondents provided useable responses to this question. The estimated total number of trips and average number of trips per boater are displayed in table 1-6. Based on the pattern of responses in the survey, New Jersey boaters took an estimated $4,159,276 \pm 431,777$ trips in New Jersey. The average number of trips in New Jersey in 2006 per boater is 28.1 ± 2.9 .

Table 1-7a:**Question 7: How many of these outings were overnight trips in New Jersey?**

Statistic	Frequency of Responses	Estimate	StdErr	95% CI	
				Lower Bound	Upper Bound
Total	427	314,581	49,476	217,292	411,871
Average	427	2.18	0.34	1.50	2.85

Respondents were asked to indicate the number of outing trips that were overnight trips in New Jersey in 2006. 427 out of 1,078 respondents provided useable responses to this question. The estimated total number of trips and average number of trips per boater are displayed in table 1-7. Based on the pattern of responses in the survey, New Jersey boaters took an estimated $314,581 \pm 97,290$ trips in New Jersey. For those that took overnight trips, the average number of overnight trips in New Jersey in 2006 per boater is 2.2 ± 0.7 .

Table 1-7b:**Question 7: How many of these outings were overnight trips in New Jersey?**

Most Frequently Used Boat	Frequency of Responses	Average	StdErr	95% CI	
				Lower Bound	Upper Bound
Powerboat less than 26 feet in length	283	1.80	0.42	0.98	2.62
Powerboat 26 feet or greater in length	86	4.36	0.78	2.82	5.90
Sailboat 26 feet or greater in length	17	3.80	1.04	1.75	5.85
Sailboat less than 26 feet in length	15	3.06	1.22	0.66	5.47
Rowboat/canoe/kayak	14	1.13	0.54	0.07	2.18
Jetski/Waverunner/PWC	12	4.46	2.22	0.08	8.84

When the average overnight trips were studied by class of most frequently used boat, boaters who most frequently used *powerboats 26 feet or greater in length* averaged 4.4 ± 1.5 overnight trips per year. Respondents who most frequently used *sailboats 26 feet or greater in length* averaged 3.8 ± 2.1 overnight trips in 2006.

Table 1-8:
Question 9: Did you purchase this boat in New Jersey in 2006?

Response	Frequency of Responses	Percent	StdErr	95% CI	
				Lower Bound	Upper Bound
Yes	249	22.52%	1.37%	19.83%	25.21%
No	829	77.48%	1.37%	74.79%	80.17%

249 of the respondents provided a positive response when asked if they bought their most frequently used boat in New Jersey in 2006. Based on the patterns of response, it is estimated that 22.5 ± 3 percent of New Jersey boaters bought their most frequently used boat in 2006.

Table 1-9:
Question 10: If you purchased this boat in New Jersey in 2006, did you purchase it:

Response	Frequency of Responses	Percent	StdErr	95% CI	
				Lower Bound	Upper Bound
From an individual	101	43.84%	3.56%	36.82%	50.86%
New from dealer	84	42.38%	3.55%	35.39%	49.38%
Used from dealer	33	13.78%	2.46%	8.92%	18.64%

Based on the patterns of response in the survey, it is estimated New Jersey boaters bought their most frequently used boat in 2006 from either an individual or new from a dealer in nearly equal proportions with estimates of 43.8 ± 7 percent from an individual and 42.4 ± 7 percent new from a dealer. The remaining 13.8 ± 5 percent boaters bought their boat used from a dealer.

Table 1-10:
Question 11: Where do you keep the boat you use most frequently during the boating season?

Response	Frequency of Responses	Percent	StdErr	95% CI	
				Lower Bound	Upper Bound
Out of water at private residence	392	39.64%	1.60%	36.50%	42.78%
In water at private residence	322	26.27%	1.38%	23.56%	28.97%
In water at marina	302	29.58%	1.51%	26.62%	32.54%
Dry dock at marina	44	4.51%	0.75%	3.04%	5.98%

Based on the patterns of response in the survey, it is estimated that 39.6 ± 3 percent of New Jersey boaters kept their most frequently used boat *out of water at a private residence* during the 2006 boating season. New Jersey boaters kept their most frequently used boat *in water at a marina or private residence* at rates of 29.6 ± 3 and 27.3 ± 3 percent respectively.

Table 1-11:
Question 12: Please provide the location of where this boat is kept during the boating season:

County	Frequency of Responses	Percent	StdErr	95% CI	
				Lower Bound	Upper Bound
Ocean	354	27.94%	1.01%	25.95%	29.93%
Monmouth	107	11.89%	0.65%	10.61%	13.17%
Cape May	91	7.55%	0.65%	6.27%	8.83%
Atlantic	68	7.89%	0.57%	6.78%	9.00%
Morris	66	6.11%	0.51%	5.12%	7.10%
Middlesex	45	4.05%	0.38%	3.30%	4.79%
Sussex	42	4.35%	0.31%	3.74%	4.95%
Cumberland	37	2.59%	0.34%	1.93%	3.25%
Burlington	31	3.77%	0.55%	2.70%	4.84%
Gloucester	29	2.50%	0.33%	1.85%	3.14%
Passaic	29	3.10%	0.36%	2.39%	3.80%
Hunterdon	24	1.90%	0.23%	1.45%	2.35%
Bergen	21	2.47%	0.43%	1.63%	3.31%
Camden	21	2.17%	0.39%	1.41%	2.92%
Mercer	19	1.60%	0.27%	1.08%	2.12%
Somerset	15	1.76%	0.33%	1.12%	2.40%
Union	15	1.24%	0.23%	0.79%	1.70%
Salem	13	1.34%	0.25%	0.85%	1.84%
Warren	13	1.52%	0.24%	1.04%	1.99%
Essex	6	0.86%	0.30%	0.28%	1.44%
Hudson	6	0.66%	0.29%	0.10%	1.23%
Accomack	2	0.18%	0.09%	0.00%	0.35%
Barnstable	2	0.24%	0.17%	0.00%	0.58%
New York	2	0.11%	0.08%	0.00%	0.26%
Orange	2	0.19%	0.15%	0.00%	0.49%
Wayne	2	0.25%	0.17%	0.00%	0.59%
Bedford	1	0.11%	0.11%	0.00%	0.33%
Brunswick	1	0.19%	0.19%	0.00%	0.56%
Jefferson	1	0.06%	0.06%	0.00%	0.18%
Lackawanna	1	0.11%	0.11%	0.00%	0.33%
Monroe	1	0.17%	0.17%	0.00%	0.49%
Montgomery	1	0.13%	0.13%	0.00%	0.38%
Oswego	1	0.13%	0.13%	0.00%	0.38%
Philadelphia	1	0.11%	0.11%	0.00%	0.32%
Pike	1	0.05%	0.05%	0.00%	0.16%
Queen Ann	1	0.11%	0.11%	0.00%	0.32%
Rennebec	1	0.16%	0.16%	0.00%	0.48%
Rockland	1	0.06%	0.06%	0.00%	0.18%
Seneca	1	0.08%	0.08%	0.00%	0.24%
Suffolk	1	0.09%	0.09%	0.00%	0.28%
Sullivan	1	0.08%	0.08%	0.00%	0.25%

Washington	1	0.14%	0.14%	0.00%	0.42%
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Based on the patterns of response in the survey, Ocean County has the largest portion of boats capturing an estimated 27.9 ± 2 percent of all boats. Monmouth County captured 11.9 ± 1.3 percent while Atlantic and Cape May captured 7.9 ± 1.1 percent and 7.6 ± 1.3 percent respectively.

Table 1-12:
Question 13: Where do you keep the boat you used most frequently during the off season?

Response	Frequency of Responses	Percent	StdErr	95% CI	
				Lower Bound	Upper Bound
Marina	261	23.16%	1.31%	20.58%	25.74%
Private Residence	792	76.84%	1.31%	74.26%	79.42%

Based on the patterns of response in the survey, it is estimated that 76.8 ± 2.6 percent of New Jersey boaters kept their most frequently used boat *at a private residence* during the off season.

Table 1-13a:
Question 14: How do you gain access to New Jersey waters with the boat that you use most frequently?

Response	Frequency of Responses	Percent	StdErr	95% CI	
				Lower Bound	Upper Bound
Launch Ramp	368	41.30%	1.71%	37.96%	44.65%
Marina	335	35.30%	1.64%	32.07%	38.52%
Private dock or mooring	256	23.40%	1.39%	20.68%	26.12%

Respondents were asked how they gained access to New Jersey waters with the boat that they used most frequently by selecting from 1 of 3 options. Percentages of choice are displayed in table 1-13. Based on the patterns of response in the survey, it is estimated that 41.3 ± 3.3 percent of New Jersey boaters gained access to their most frequently used boat using *a launch ramp*.

Table 1-13b:
Question 14: How do you gain access to New Jersey waters with the boat that you use most frequently?

Most Frequently Used Boat	Response	Frequency of Responses	Percent	StdErr	95% CI	
					Lower Bound	Upper Bound
Powerboat less than 26 feet in length	Launch Ramp	287	42.90%	2.06%	38.86%	46.94%
Powerboat less than 26 feet in length	Marina	224	34.24%	1.97%	30.37%	38.10%
Powerboat less than 26 feet in length	Private dock or mooring	180	22.87%	1.66%	19.61%	26.13%
Powerboat 26 feet or greater in length	Launch Ramp	6	5.10%	2.58%	0.04%	10.16%
Powerboat 26 feet or greater in length	Marina	75	60.80%	4.21%	52.54%	69.06%
Powerboat 26 feet or greater in length	Private dock or mooring	46	34.10%	3.49%	27.25%	40.95%
Sailboat less than 26 feet in length	Launch Ramp	9	28.78%	9.15%	10.82%	46.73%
Sailboat less than 26 feet in length	Marina	9	35.78%	9.99%	16.17%	55.39%
Sailboat less than 26 feet in length	Private dock or mooring	13	35.44%	9.41%	16.98%	53.90%
Sailboat 26 feet or greater in length	Launch Ramp	0				
Sailboat 26 feet or greater in length	Marina	19	74.33%	9.23%	56.22%	92.44%
Sailboat 26 feet or greater in length	Private dock or mooring	6	25.67%	9.23%	7.56%	43.78%
Jetski/Waverunner/PWC	Launch Ramp	29	69.23%	7.74%	54.03%	84.43%
Jetski/Waverunner/PWC	Marina	6	14.48%	6.22%	2.27%	26.69%
Jetski/Waverunner/PWC	Private dock or mooring	9	16.29%	5.71%	5.08%	27.50%
Rowboat/canoe/kayak	Launch Ramp	37	90.22%	5.18%	80.05%	100.00%
Rowboat/canoe/kayak	Marina	2	2.40%	1.70%	0.00%	5.74%
Rowboat/canoe/kayak	Private dock or mooring	2	7.38%	4.97%	0.00%	17.13%

When the estimated percentages were studied by class of most frequently used boat, boaters who most frequently used *powerboats 26 feet or greater in length* used *marinas* 60.8 ± 8.3 percent of the time to gain access to their boat. Boaters who most frequently used *sailboats 26 feet or greater in length* used *marinas* 74.3 ± 18.1 percent to gain access to their boats.

Table 1-14:

Question 15: What is the average distance you travel (one-way) by vehicle to gain access to New Jersey waters?

Frequency of Responses	Average	StdErr	95% CI	
			Lower Bound	Upper Bound
923	27.21	1.72	23.85	30.58

Respondents were asked to enter their average one-way distance traveled to gain access to New Jersey waters. 923 out of 1,078 respondents provided useable answers. The average over all boaters is displayed in table 1-14. On average, New Jersey boaters travel 27.2 ± 3.4 miles to gain access to New Jersey waters.

Table 1-15:

Question 16: What type of vehicle do you use to gain access to New Jersey waters?

Vehicle Category	Frequency of Responses	Percent	StdErr	95% CI	
				Lower Bound	Upper Bound
SUV/Truck	678	68.10%	1.56%	65.04%	71.17%
Car	196	20.23%	1.38%	17.53%	22.93%
None	91	8.26%	0.87%	6.55%	9.97%
Other	30	3.41%	0.63%	2.17%	4.65%

Respondents were asked to select the type of vehicle they used to gain access to New Jersey waters from a set of choices. 995 out of 1,078 respondents provided useable responses. The percentages of the choices are displayed in table 1-15. Based on the patterns of responses in the survey, it is estimated that 68.1 ± 3.1 percent of New Jersey boaters used either an SUV or a truck to access waters.

Table 1-16:

Question 17: Please indicate the percentage of trips that were made in the following types of waterbodies with the boat you used most frequently in 2006:

Body of Water	Frequency of Responses	Average (Percent)	StdErr	95% CI	
				Lower Bound	Upper Bound
Along East Coast	952	14.06	0.92	12.25	15.87
Bays	952	40.04	1.35	37.4	42.69
Offshore	952	4.19	0.43	3.33	5.04
Lakes	952	24.82	1.15	22.56	27.09
Rivers	952	16.89	1.08	14.76	19.01

Respondents were asked to estimate their trip frequency by type of water body by using percentages. 952 out of 1,078 respondents provided useable responses to this question. The average of respondent provided percentages per body of water is displayed in table 1-16. Based on the pattern of responses in the survey, New Jersey boaters were most likely to take a trip in *bays* with an average percent of 40.0 ± 2.6 percent of trips. The second most frequented body of water were lakes at 24.8 ± 2.1 percent of all trips.

Table 1-17:

Question 18: What was the primary purpose of your 2006 boat outings?

Primary Purpose	Frequency of Responses	Average (Percent)	StdErr	95% CI	
				Lower Bound	Upper Bound
Fishing	896	55.84	1.59	52.73	58.95
Cruising	896	34.32	1.40	31.57	37.07
Swimming/Skiing	896	8.87	0.77	7.36	10.37
Other	896	0.97	0.34	0.30	1.64

Respondents were asked to estimate their trip frequency by primary purpose of trip by using percentages. 896 out of 1,078 respondents provided useable responses to this question. The average of respondent provided percentages per primary purpose of trip is displayed in table 1-17. Based on the pattern of responses in the survey, New Jersey boaters were most likely to take a trip for the purpose of fishing since the average percent of trips for that category was estimated at 55.9 ± 3.1 percent. The second most likely

purpose of a trip was cruising since the estimated average for that category amounted to 34.3 ± 2.3 percent.

Table 1-18a:

Question 19: How many people typically participated in your 2006 boat outings?

Frequency of Responses	Average	StdErr	95% CI	
			Lower Bound	Upper Bound
1,034	3.98	0.20	3.58	4.38

Respondents were asked to provide the number of people who typically participated in 2006 boat outings. 1,034 out of 1,078 respondents provided useable responses to this question. Based on the pattern of responses in the survey, New Jersey boaters had on average 4 ± 0.4 boaters per outing.

Table 1-18b:

Question 19: How many people typically participated in your 2006 boat outings?

Most Frequently Used Boat	Frequency of Responses	Average	StdErr	95% CI	
				Lower Bound	Upper Bound
Powerboat less than 26 feet in length	752	3.71	0.20	3.32	4.10
Powerboat 26 feet or greater in length	132	6.77	1.28	4.25	9.30
Jetski/Waverunner/PWC	47	4.45	1.13	2.22	6.67
Rowboat/canoe/kayak	44	2.46	0.18	2.11	2.81
Sailboat less than 26 feet in length	34	4.12	0.91	2.33	5.90
Sailboat 26 feet or greater in length	25	3.55	0.28	3.01	4.09

By studying the average number of boaters per outing by class of most frequently used boat, boaters who use *powerboats 26 feet or greater in length* invite a higher number of people on average (6.8 ± 2.5).

Table 1-19a

Question 22: Please estimate your expenses on a single TYPICAL OUTING during 2006 in New Jersey for the boat for your use most frequently: (Please do not include any annual expenditures in this section.)

Category	Frequency of Responses	Average	StdErr	95% CI	
				Lower Bound	Upper Bound
Fuel for Transportation to launch site	989	\$24	\$3	\$19	\$29
Restaurant meals/drinks	989	\$36	\$3	\$30	\$42
Boat fuel: Diesel	989	\$11	\$4	\$3	\$19
Boat fuel: Gasoline	989	\$60	\$8	\$44	\$76
Groceries	989	\$21	\$2	\$16	\$26
Boat accessories	989	\$35	\$5	\$25	\$46
Overnight lodging	989	\$10	\$3	\$4	\$15
Fishing supplies	989	\$37	\$5	\$27	\$46
Shopping/Souvenirs	989	\$9	\$6	-\$2	\$21
Launch fees	989	\$9	\$1	\$7	\$11
Entertainment	989	\$5	\$1	\$3	\$6
Temporary docking	989	\$10	\$3	\$4	\$17
Other	989	\$6	\$2	\$1	\$10
Total expenditures	989	\$273	\$21	\$232	\$315

Respondents were asked to enter expenses by category for typical trip outing expenses on most their frequently used boat. The total trip expenditure per respondent was derived by adding each respondent's components together. 989 out of 1,078 respondents provided useable responses. The estimated averages per category are displayed in table 1-19a. Based on the patterns of responses in the survey, it is estimated New Jersey boaters spent on average 273 ± 42 dollars per typical outing trip. The greatest expense is *gasoline for the boat* at $\$60 \pm 16$ dollars per typical outing. Because there were so few non-zero responses for the category of *shopping/souvenirs*, the relative standard error is large. The confidence interval becomes so large that the lower bound exceeds the lower limit of zero dollars. The estimate for average spending on shopping/souvenirs is not reliable.

Table 1-19b:

Question 22: Please estimate your expenses on a single TYPICAL OUTING during 2006 in New Jersey for the boat for your use most frequently: (Please do not include any annual expenditures in this section.)

Most Frequently Used Boat	Category	Frequency of Responses	Average	StdErr	95% CI	
					Lower Bound	Upper Bound
Powerboat less than 26 feet in length	Fuel for Transportation to launch site	729	\$21	\$3	\$16	\$27
Powerboat less than 26 feet in length	Restaurant meals/drinks	729	\$33	\$4	\$26	\$40
Powerboat less than 26 feet in length	Boat fuel: Diesel	729	\$5	\$3	-\$1	\$12
Powerboat less than 26 feet in length	Boat fuel: Gasoline	729	\$47	\$5	\$38	\$57
Powerboat less than 26 feet in length	Groceries	729	\$19	\$3	\$14	\$25
Powerboat less than 26 feet in length	Boat accessories	729	\$34	\$6	\$21	\$47
Powerboat less than 26 feet in length	Overnight lodging	729	\$8	\$4	\$1	\$15
Powerboat less than 26 feet in length	Fishing supplies	729	\$35	\$5	\$24	\$45
Powerboat less than 26 feet in length	Shopping/Souvenirs	729	\$10	\$7	-\$4	\$25
Powerboat less than 26 feet in length	Launch fees	729	\$10	\$1	\$7	\$12
Powerboat less than 26 feet in length	Entertainment	729	\$4	\$1	\$2	\$5
Powerboat less than 26 feet in length	Temporary docking	729	\$9	\$4	\$2	\$17
Powerboat less than 26 feet in length	Other	729	\$6	\$3	\$0	\$11
Powerboat less than 26 feet in length	Total Trip Expenditure	729	\$242	\$24	\$195	\$289

Table 1-19b (Cont' d):

Question 22: Please estimate your expenses on a single TYPICAL OUTING during 2006 in New Jersey for the boat for your use most frequently: (Please do not include any annual expenditures in this section.)

Most Frequently Used Boat	Category	Frequency of Responses	Average	StdErr	95% CI	
					Lower Bound	Upper Bound
Powerboat 26 feet or greater in length	Fuel for Transportation to launch site	123	\$17	\$4	\$9	\$24
Powerboat 26 feet or greater in length	Restaurant meals/drinks	123	\$65	\$9	\$48	\$83
Powerboat 26 feet or greater in length	Boat fuel: Diesel	123	\$70	\$32	\$7	\$133
Powerboat 26 feet or greater in length	Boat fuel: Gasoline	123	\$204	\$74	\$59	\$349
Powerboat 26 feet or greater in length	Groceries	123	\$38	\$7	\$24	\$53
Powerboat 26 feet or greater in length	Boat accessories	123	\$61	\$20	\$22	\$101
Powerboat 26 feet or greater in length	Overnight lodging	123	\$20	\$5	\$10	\$30
Powerboat 26 feet or greater in length	Fishing supplies	123	\$83	\$24	\$36	\$129
Powerboat 26 feet or greater in length	Shopping/Souvenirs	123	\$10	\$3	\$3	\$17
Powerboat 26 feet or greater in length	Launch fees	123	\$4	\$2	\$1	\$8
Powerboat 26 feet or greater in length	Entertainment	123	\$13	\$3	\$6	\$20
Powerboat 26 feet or greater in length	Temporary docking	123	\$31	\$13	\$5	\$56
Powerboat 26 feet or greater in length	Other	123	\$16	\$9	-\$2	\$33
Powerboat 26 feet or greater in length	Total Trip Expenditure	123	\$632	\$104	\$427	\$837

Table 1-19b (Cont' d):

Question 22: Please estimate your expenses on a single TYPICAL OUTING during 2006 in New Jersey for the boat for your use most frequently: (Please do not include any annual expenditures in this section.)

Most Frequently Used Boat	Category	Frequency of Responses	Average	StdErr	95% CI	
					Lower Bound	Upper Bound
Sailboat less than 26 feet in length	Fuel for Transportation to launch site	32	\$27	\$17	-\$7	\$61
Sailboat less than 26 feet in length	Restaurant meals/drinks	32	\$32	\$13	\$6	\$59
Sailboat less than 26 feet in length	Boat fuel: Diesel	32	\$8	\$6	-\$3	\$19
Sailboat less than 26 feet in length	Boat fuel: Gasoline	32	\$4	\$1	\$2	\$7
Sailboat less than 26 feet in length	Groceries	32	\$21	\$11	\$0	\$42
Sailboat less than 26 feet in length	Boat accessories	32	\$34	\$21	-\$7	\$75
Sailboat less than 26 feet in length	Overnight lodging	32	\$12	\$8	-\$4	\$28
Sailboat less than 26 feet in length	Fishing supplies	32	\$3	\$2	-\$1	\$6
Sailboat less than 26 feet in length	Shopping/Souvenirs	32	\$3	\$2	-\$1	\$6
Sailboat less than 26 feet in length	Launch fees	32	\$3	\$1	\$1	\$5
Sailboat less than 26 feet in length	Entertainment	32	\$3	\$2	-\$1	\$7
Sailboat less than 26 feet in length	Temporary docking	32	\$2	\$2	-\$2	\$5
Sailboat less than 26 feet in length	Other	32	\$0	\$0	\$0	\$1
Sailboat less than 26 feet in length	Total Trip Expenditure	32	\$152	\$54	\$46	\$259

Table 1-19b (Cont' d):

Question 22: Please estimate your expenses on a single TYPICAL OUTING during 2006 in New Jersey for the boat for your use most frequently: (Please do not include any annual expenditures in this section.)

Most Frequently Used Boat	Category	Frequency of Responses	Average	StdErr	95% CI	
					Lower Bound	Upper Bound
Sailboat 26 feet or greater in length	Fuel for Transportation to launch site	24	\$22	\$10	\$2	\$43
Sailboat 26 feet or greater in length	Restaurant meals/drinks	24	\$70	\$17	\$37	\$102
Sailboat 26 feet or greater in length	Boat fuel: Diesel	24	\$4	\$2	\$1	\$7
Sailboat 26 feet or greater in length	Boat fuel: Gasoline	24	\$135	\$78	-\$19	\$289
Sailboat 26 feet or greater in length	Groceries	24	\$38	\$11	\$15	\$61
Sailboat 26 feet or greater in length	Boat accessories	24	\$40	\$17	\$7	\$74
Sailboat 26 feet or greater in length	Overnight lodging	24	\$22	\$12	-\$2	\$47
Sailboat 26 feet or greater in length	Fishing supplies	24	\$17	\$15	-\$13	\$47
Sailboat 26 feet or greater in length	Shopping/Souvenirs	24	\$2	\$2	-\$2	\$7
Sailboat 26 feet or greater in length	Launch fees	24	\$1	\$1	-\$1	\$3
Sailboat 26 feet or greater in length	Entertainment	24	\$15	\$12	-\$8	\$38
Sailboat 26 feet or greater in length	Temporary docking	24	\$11	\$8	-\$4	\$26
Sailboat 26 feet or greater in length	Other	24	\$0	\$0	\$0	\$0
Sailboat 26 feet or greater in length	Total Trip Expenditure	24	\$378	\$107	\$166	\$589
Jetski/Waverunner/PWC	Fuel for Transportation to launch site	43	\$31	\$12	\$8	\$54
Jetski/Waverunner/PWC	Restaurant meals/drinks	43	\$37	\$12	\$13	\$62
Jetski/Waverunner/PWC	Boat fuel: Diesel	43	\$3	\$2	-\$2	\$7
Jetski/Waverunner/PWC	Boat fuel: Gasoline	43	\$38	\$8	\$23	\$53
Jetski/Waverunner/PWC	Groceries	43	\$18	\$6	\$6	\$30
Jetski/Waverunner/PWC	Boat accessories	43	\$26	\$12	\$2	\$49
Jetski/Waverunner/PWC	Overnight lodging	43	\$3	\$3	-\$2	\$8
Jetski/Waverunner/PWC	Fishing supplies	43	\$3	\$2	\$0	\$7
Jetski/Waverunner/PWC	Shopping/Souvenirs	43	\$2	\$1	\$0	\$5
Jetski/Waverunner/PWC	Launch fees	43	\$19	\$5	\$9	\$29
Jetski/Waverunner/PWC	Entertainment	43	\$4	\$3	-\$1	\$10
Jetski/Waverunner/PWC	Temporary docking	43	\$0	\$0	\$0	\$0
Jetski/Waverunner/PWC	Other	43	\$0	\$0	\$0	\$1
Jetski/Waverunner/PWC	Total Trip Expenditure	43	\$184	\$43	\$101	\$268

Table 1-19b (Cont' d):

Question 22: Please estimate your expenses on a single TYPICAL OUTING during 2006 in New Jersey for the boat for your use most frequently: (Please do not include any annual expenditures in this section.)

Most Frequently Used Boat	Category	Frequency of Responses	Average	StdErr	95% CI	
					Lower Bound	Upper Bound
Rowboat/canoe/kayak	Fuel for Transportation to launch site	38	\$83	\$39	\$6	\$161
Rowboat/canoe/kayak	Restaurant meals/drinks	38	\$16	\$5	\$5	\$26
Rowboat/canoe/kayak	Boat fuel: Diesel	38	\$0	\$0	\$0	\$0
Rowboat/canoe/kayak	Boat fuel: Gasoline	38	\$4	\$1	\$1	\$7
Rowboat/canoe/kayak	Groceries	38	\$12	\$5	\$2	\$22
Rowboat/canoe/kayak	Boat accessories	38	\$8	\$3	\$3	\$14
Rowboat/canoe/kayak	Overnight lodging	38	\$15	\$9	-\$2	\$33
Rowboat/canoe/kayak	Fishing supplies	38	\$36	\$11	\$14	\$58
Rowboat/canoe/kayak	Shopping/Souvenirs	38	\$9	\$8	-\$7	\$26
Rowboat/canoe/kayak	Launch fees	38	\$6	\$4	-\$1	\$13
Rowboat/canoe/kayak	Entertainment	38	\$0	\$0	\$0	\$0
Rowboat/canoe/kayak	Temporary docking	38	\$1	\$1	\$0	\$2
Rowboat/canoe/kayak	Other	38	\$0	\$0	\$0	\$0
Rowboat/canoe/kayak	Total Trip Expenditure	38	\$191	\$50	\$94	\$288

By studying estimated average spending per typical outing, one can see differences by category of most frequently used boat. Respondents who use *powerboats 26 feet or greater in length* have the highest average spending per typical trip outing with an estimated average of 632 ± 205 dollars. Respondents who use *sailboats 26 feet or greater in length* spend 378 ± 212 dollars on average for a typical outing. Within each “most frequently used boat” category, one or more expense categories have confidence intervals that are so large that the lower bound exceeds the lower limit of zero dollars. In these cases, very few answers had non-zero values. Estimates of averages are not reliable in these instances.

Table 1-20a:

Question 23: Please estimate your ANNUAL Boat Related Expenses in New Jersey during 2006 for the boat for you use most frequently: Please include expenditures that you actually made in 2006.

Category	Frequency of Responses	Total	StdErr	95% CI	
				Lower Bound	Upper Bound
Engine maintenance repair	998	\$50,715,901	\$5,926,481	\$39,085,205	\$62,346,597
Boater education	998	\$2,768,062	\$256,937	\$2,263,825	\$3,272,299
Electronic/electrical repair	998	\$4,932,006	\$619,828	\$3,715,595	\$6,148,417
Boating education/instruction	998	\$3,292,548	\$689,753	\$1,938,910	\$4,646,186
Trailer maintenance/repair	998	\$8,186,343	\$1,112,188	\$6,003,677	\$10,369,009
Other	998	\$7,506,126	\$1,790,983	\$3,991,329	\$11,020,924
Seasonal slip/mooring rental	998	\$107,501,052	\$6,128,540	\$95,473,816	\$119,528,288
New and/or replacement electronics	998	\$27,911,865	\$3,059,116	\$21,908,361	\$33,915,370
Winterization and off-season storage	998	\$57,479,500	\$2,697,795	\$52,185,087	\$62,773,913
New and/or replacement sails/rigging	998	\$2,629,562	\$624,067	\$1,404,833	\$3,854,290
Put-in/haul-out charges	998	\$11,967,215	\$1,029,289	\$9,947,239	\$13,987,191
Boating clothing	998	\$9,005,833	\$544,113	\$7,938,012	\$10,073,653
Boat and/or towing insurance	998	\$43,141,127	\$1,838,830	\$39,532,430	\$46,749,824
Fishing equipment	998	\$32,120,489	\$2,190,728	\$27,821,193	\$36,419,785
Taxes/registration fees	998	\$9,544,315	\$1,105,922	\$7,373,947	\$11,714,683
Water skiing equipment	998	\$3,164,811	\$405,405	\$2,369,205	\$3,960,416
Purchase of boat	998	\$441,028,958	\$62,080,591	\$319,196,030	\$562,861,885
Scuba diving equipment	998	\$9,331,103	\$3,978,332	\$1,523,642	\$17,138,564
Annual boat loan payment	998	\$65,765,972	\$7,715,704	\$50,623,931	\$80,908,012
Other boating supplies	998	\$13,694,307	\$994,889	\$11,741,841	\$15,646,773
Hull repair	998	\$4,709,622	\$1,057,151	\$2,634,966	\$6,784,277
Race/Regatta/tournament fees	998	\$3,746,032	\$838,380	\$2,100,714	\$5,391,351
Bottom paint	998	\$10,992,818	\$695,517	\$9,627,868	\$12,357,769
Boat club/association feeds	998	\$7,084,144	\$1,258,986	\$4,613,389	\$9,554,899
Total annual expenditure	998	\$938,219,709	\$68,618,433	\$803,556,291	\$1,072,883,128

Respondents were asked to enter expenses by category for annual boat related expenses on most their frequently used boat. The total annual boat related expense per respondent was derived by adding each respondent's components together. 998 out of 1,078 respondents provided useable responses. The estimated totals per category are displayed in table 1-20a. Based on the patterns of responses in the survey, it is estimated New Jersey boaters spent a total of 938,219,709 \pm 134,663,419 dollars on annual boat related expenses. The category with the largest total is for the *purchase of a boat* at 441,028,958 \pm 121,832,928 followed by expense for *seasonal slip/mooring rental* at 107,501,052 \pm 12,027,236 dollars. Given the large total estimated expense for boat purchase, it is not surprising that the third ranked expense comes from annual boat loan payment at 65,765,972 \pm 15,142,041 dollars.

Table 1-20b:

Question 23: Please estimate your ANNUAL Boat Related Expenses in New Jersey during 2006 for the boat for you use most frequently: Please include expenditures that you actually made in 2006.

Most Frequently Used Boat	Category	Frequency of Responses	Total	StdErr	95% CI	
					Lower Bound	Upper Bound
Powerboat less than 26 feet in length	Engine maintenance repair	732	\$35,535,299	\$5,280,626	\$25,170,893	\$45,899,704
Powerboat less than 26 feet in length	Boater education	732	\$2,207,394	\$242,776	\$1,730,891	\$2,683,897
Powerboat less than 26 feet in length	Electronic/ electrical repair	732	\$3,339,986	\$517,477	\$2,324,321	\$4,355,650
Powerboat less than 26 feet in length	Boating education/ instruction	732	\$2,520,476	\$685,150	\$1,175,717	\$3,865,236
Powerboat less than 26 feet in length	Trailer maintenance/ repair	732	\$6,673,561	\$1,072,643	\$4,568,259	\$8,778,863
Powerboat less than 26 feet in length	Other	732	\$3,649,087	\$906,586	\$1,869,710	\$5,428,464
Powerboat less than 26 feet in length	Seasonal slip/ mooring rental	732	\$68,797,195	\$4,430,777	\$60,100,806	\$77,493,583
Powerboat less than 26 feet in length	New and/or replacement electronics	732	\$16,083,069	\$1,606,072	\$12,930,794	\$19,235,343
Powerboat less than 26 feet in length	Winterization and off-season storage	732	\$36,232,674	\$2,224,647	\$31,866,309	\$40,599,039
Powerboat less than 26 feet in length	New and/or replacement sails /rigging	732	\$563,114	\$132,123	\$303,794	\$822,434
Powerboat less than 26 feet in length	Put-in/haul-out charges	732	\$7,983,404	\$901,388	\$6,214,228	\$9,752,579
Powerboat less than 26 feet in length	Boating clothing	732	\$6,055,720	\$468,646	\$5,135,897	\$6,975,542
Powerboat less than 26 feet in length	Boat and/or towing insurance	732	\$28,987,157	\$1,374,781	\$26,288,843	\$31,685,471
Powerboat less than 26 feet in length	Fishing equipment	732	\$24,648,647	\$1,723,623	\$21,265,653	\$28,031,641
Powerboat less than 26 feet in length	Taxes/ registration fees	732	\$7,075,614	\$973,384	\$5,165,130	\$8,986,097
Powerboat less than 26 feet in length	Water skiing equipment	732	\$2,712,418	\$397,419	\$1,932,395	\$3,492,441
Powerboat less than 26 feet in length	Purchase of boat	732	\$254,932,860	\$42,006,150	\$172,486,421	\$337,379,300
Powerboat less than 26 feet in length	Scuba diving equipment	732	\$6,823,221	\$3,708,484	-\$455,507	\$14,101,948
Powerboat less than 26 feet in length	Annual boat loan payment	732	\$35,888,355	\$5,468,275	\$25,155,646	\$46,621,065
Powerboat less than 26 feet in length	Other boating supplies	732	\$8,866,679	\$744,201	\$7,406,018	\$10,327,340
Powerboat less than 26 feet in length	Hull repair	732	\$2,458,167	\$681,533	\$1,120,507	\$3,795,826
Powerboat less than 26 feet in length	Race/ Regatta/ tournament fees	732	\$2,511,949	\$717,296	\$1,104,094	\$3,919,803
Powerboat less than 26 feet in length	Bottom paint	732	\$6,947,997	\$463,227	\$6,038,811	\$7,857,183
Powerboat less than 26 feet in length	Boat club/ association fees	732	\$4,907,966	\$1,155,001	\$2,641,018	\$7,174,913
Powerboat less than 26 feet in length	Total annual expenditure	732	\$576,402,005	\$48,248,384	\$481,703,789	\$671,100,221

Table 1-20b (Cont' d):

Question 23: Please estimate your ANNUAL Boat Related Expenses in New Jersey during 2006 for the boat for you use most frequently: Please include expenditures that you actually made in 2006.

Most Frequently Used Boat	Category	Frequency of Responses	Total	StdErr	95% CI	
					Lower Bound	Upper Bound
Powerboat 26 feet or greater in length	Engine maintenance repair	127	\$12,559,179	\$2,697,924	\$7,253,752	\$17,864,606
Powerboat 26 feet or greater in length	Boater education	127	\$373,694	\$64,963	\$245,944	\$501,443
Powerboat 26 feet or greater in length	Electronic/ electrical repair	127	\$1,351,557	\$339,744	\$683,455	\$2,019,658
Powerboat 26 feet or greater in length	Boating education/ instruction	127	\$489,109	\$74,284	\$343,030	\$635,187
Powerboat 26 feet or greater in length	Trailer maintenance/ repair	127	\$714,856	\$271,850	\$180,268	\$1,249,444
Powerboat 26 feet or greater in length	Other	127	\$3,094,453	\$1,476,989	\$189,977	\$5,998,930
Powerboat 26 feet or greater in length	Seasonal slip/ mooring rental	127	\$25,349,421	\$2,690,679	\$20,058,243	\$30,640,600
Powerboat 26 feet or greater in length	New and/or replacement electronics	127	\$10,410,958	\$2,631,478	\$5,236,196	\$15,585,719
Powerboat 26 feet or greater in length	Winterization and off-season storage	127	\$15,617,976	\$1,471,075	\$12,725,130	\$18,510,821
Powerboat 26 feet or greater in length	New and/or replacement sails/ rigging	127	\$426,235	\$300,188	-\$164,081	\$1,016,551
Powerboat 26 feet or greater in length	Put-in/ haul-out charges	127	\$2,891,730	\$489,210	\$1,929,706	\$3,853,753
Powerboat 26 feet or greater in length	Boating clothing	127	\$1,833,016	\$271,534	\$1,299,050	\$2,366,983
Powerboat 26 feet or greater in length	Boat and/or towing insurance	127	\$11,544,541	\$1,318,524	\$8,951,684	\$14,137,398
Powerboat 26 feet or greater in length	Fishing equipment	127	\$6,479,145	\$1,396,879	\$3,732,203	\$9,226,087
Powerboat 26 feet or greater in length	Taxes/registration fees	127	\$1,679,016	\$541,556	\$614,055	\$2,743,977
Powerboat 26 feet or greater in length	Water skiing equipment	127	\$207,180	\$54,400	\$100,203	\$314,157
Powerboat 26 feet or greater in length	Purchase of boat	127	\$166,639,772	\$45,266,161	\$77,624,563	\$255,654,981
Powerboat 26 feet or greater in length	Scuba diving equipment	127	\$1,867,650	\$1,390,706	-\$867,152	\$4,602,452
Powerboat 26 feet or greater in length	Annual boat loan payment	127	\$26,270,827	\$5,464,229	\$15,525,504	\$37,016,149
Powerboat 26 feet or greater in length	Other boating supplies	127	\$3,394,636	\$631,544	\$2,152,714	\$4,636,557
Powerboat 26 feet or greater in length	Hull repair	127	\$1,876,685	\$802,703	\$298,181	\$3,455,189
Powerboat 26 feet or greater in length	Race/ Regatta/ tournament fees	127	\$1,042,133	\$427,342	\$201,771	\$1,882,495
Powerboat 26 feet or greater in length	Bottom paint	127	\$3,103,765	\$519,532	\$2,082,113	\$4,125,418
Powerboat 26 feet or greater in length	Boat club/ association feeds	127	\$1,031,746	\$358,036	\$327,673	\$1,735,819
Powerboat 26 feet or greater in length	Total annual expenditure	127	\$300,249,279	\$49,760,070	\$202,396,867	\$398,101,690

Table 1-20b (Cont' d):

Question 23: Please estimate your ANNUAL Boat Related Expenses in New Jersey during 2006 for the boat for you use most frequently: Please include expenditures that you actually made in 2006.

Most Frequently Used Boat	Category	Frequency of Responses	Total	StdErr	95% CI	
					Lower Bound	Upper Bound
Sailboat less than 26 feet in length	Engine maintenance repair	33	\$763,783	\$372,239	\$32,538	\$1,495,027
Sailboat less than 26 feet in length	Boater education	33	\$49,828	\$30,611	-\$10,305	\$109,961
Sailboat less than 26 feet in length	Electronic/ electrical repair	33	\$96,107	\$49,018	-\$187	\$192,400
Sailboat less than 26 feet in length	Boating education/ instruction	33	\$79,385	\$24,159	\$31,926	\$126,843
Sailboat less than 26 feet in length	Trailer maintenance/ repair	33	\$293,008	\$119,494	\$58,268	\$527,748
Sailboat less than 26 feet in length	Other	33	\$66,008	\$46,307	-\$24,961	\$156,977
Sailboat less than 26 feet in length	Seasonal slip/ mooring rental	33	\$3,535,749	\$1,261,305	\$1,057,978	\$6,013,521
Sailboat less than 26 feet in length	New and/or replacement electronics	33	\$507,752	\$219,788	\$75,991	\$939,514
Sailboat less than 26 feet in length	Winterization and off-season storage	33	\$1,872,977	\$745,011	\$409,440	\$3,336,513
Sailboat less than 26 feet in length	New and/or replacement sails/rigging	33	\$729,954	\$415,340	-\$85,962	\$1,545,869
Sailboat less than 26 feet in length	Put-in/haul-out charges	33	\$517,217	\$186,881	\$150,099	\$884,336
Sailboat less than 26 feet in length	Boating clothing	33	\$345,525	\$109,267	\$130,874	\$560,175
Sailboat less than 26 feet in length	Boat and/or towing insurance	33	\$690,067	\$196,437	\$304,176	\$1,075,957
Sailboat less than 26 feet in length	Fishing equipment	33	\$154,826	\$78,696	\$232	\$309,421
Sailboat less than 26 feet in length	Taxes/ registration fees	33	\$209,849	\$51,847	\$107,999	\$311,699
Sailboat less than 26 feet in length	Water skiing equipment	33	\$96,941	\$49,680	-\$653	\$194,535
Sailboat less than 26 feet in length	Purchase of boat	33	\$7,079,252	\$6,653,827	-\$5,991,858	\$20,150,363
Sailboat less than 26 feet in length	Scuba diving equipment	33	\$42,886	\$42,714	-\$41,024	\$126,795
Sailboat less than 26 feet in length	Annual boat loan payment	33	\$0	\$0	\$0	\$0
Sailboat less than 26 feet in length	Other boating supplies	33	\$228,120	\$72,073	\$86,536	\$369,703
Sailboat less than 26 feet in length	Hull repair	33	\$150,168	\$90,686	-\$27,980	\$328,316
Sailboat less than 26 feet in length	Race/ Regatta/ tournament fees	33	\$114,978	\$74,698	-\$31,762	\$261,718
Sailboat less than 26 feet in length	Bottom paint	33	\$273,941	\$83,722	\$109,474	\$438,408
Sailboat less than 26 feet in length	Boat club/ association fees	33	\$581,388	\$266,467	\$57,926	\$1,104,850
Sailboat less than 26 feet in length	Total annual expenditure	33	\$18,479,709	\$7,541,324	\$3,665,156	\$33,294,263

Table 1-20b (Cont' d):

Question 23: Please estimate your ANNUAL Boat Related Expenses in New Jersey during 2006 for the boat for you use most frequently: Please include expenditures that you actually made in 2006.

Most Frequently Used Boat	Category	Frequency of Responses	Total	StdErr	95% CI	
					Lower Bound	Upper Bound
Sailboat 26 feet or greater in length	Engine maintenance repair	25	\$885,318	\$399,251	\$98,472	\$1,672,164
Sailboat 26 feet or greater in length	Boater education	25	\$3,335	\$3,310	-\$3,188	\$9,859
Sailboat 26 feet or greater in length	Electronic/ electrical repair	25	\$60,833	\$24,568	\$12,414	\$109,251
Sailboat 26 feet or greater in length	Boating education/ instruction	25	\$99,343	\$28,733	\$42,715	\$155,971
Sailboat 26 feet or greater in length	Trailer maintenance/ repair	25	\$789	\$782	-\$753	\$2,330
Sailboat 26 feet or greater in length	Other	25	\$223,975	\$164,467	-\$100,158	\$548,108
Sailboat 26 feet or greater in length	Seasonal slip/ mooring rental	25	\$9,001,091	\$3,565,434	\$1,974,314	\$16,027,869
Sailboat 26 feet or greater in length	New and/or replacement electronics	25	\$593,956	\$191,379	\$216,785	\$971,127
Sailboat 26 feet or greater in length	Winterization and off-season storage	25	\$2,759,508	\$836,504	\$1,110,922	\$4,408,094
Sailboat 26 feet or greater in length	New and/or replacement sails/rigging	25	\$850,356	\$330,357	\$199,285	\$1,501,426
Sailboat 26 feet or greater in length	Put-in/haul-out charges	25	\$194,072	\$82,717	\$31,054	\$357,090
Sailboat 26 feet or greater in length	Boating clothing	25	\$328,980	\$89,068	\$153,444	\$504,516
Sailboat 26 feet or greater in length	Boat and/or towing insurance	25	\$986,744	\$279,686	\$435,538	\$1,537,950
Sailboat 26 feet or greater in length	Fishing equipment	25	\$87,549	\$35,160	\$18,255	\$156,842
Sailboat 26 feet or greater in length	Taxes/ registration fees	25	\$178,634	\$45,465	\$89,031	\$268,238
Sailboat 26 feet or greater in length	Water skiing equipment	25	\$0	\$0	\$0	\$0
Sailboat 26 feet or greater in length	Purchase of boat	25	\$1,311,333	\$1,304,315	-\$1,259,217	\$3,881,884
Sailboat 26 feet or greater in length	Scuba diving equipment	25	\$6,000	\$5,975	-\$5,775	\$17,775
Sailboat 26 feet or greater in length	Annual boat loan payment	25	\$2,648,077	\$1,126,988	\$427,002	\$4,869,152
Sailboat 26 feet or greater in length	Other boating supplies	25	\$309,921	\$107,989	\$97,095	\$522,748
Sailboat 26 feet or greater in length	Hull repair	25	\$169,533	\$54,238	\$62,640	\$276,426
Sailboat 26 feet or greater in length	Race/Regatta/ tournament fees	25	\$40,920	\$33,945	-\$25,979	\$107,818
Sailboat 26 feet or greater in length	Bottom paint	25	\$591,060	\$166,806	\$262,318	\$919,803
Sailboat 26 feet or greater in length	Boat club/ association feeds	25	\$532,111	\$280,747	-\$21,187	\$1,085,409
Sailboat 26 feet or greater in length	Total annual expenditure	25	\$21,863,438	\$5,302,894	\$11,412,464	\$32,314,412

Table 1-20b (Cont' d):

Question 23: Please estimate your ANNUAL Boat Related Expenses in New Jersey during 2006 for the boat for you use most frequently: Please include expenditures that you actually made in 2006.

Most Frequently Used Boat	Category	Frequency of Responses	Total	StdErr	95% CI	
					Lower Bound	Upper Bound
Jetski/ Waverunner/PWC	Engine maintenance repair	45	\$788,745	\$232,862	\$331,573	\$1,245,917
Jetski/ Waverunner/PWC	Boater education	45	\$128,248	\$61,672	\$7,169	\$249,327
Jetski/ Waverunner/PWC	Electronic / electrical repair	45	\$65,736	\$38,773	-\$10,387	\$141,858
Jetski/ Waverunner/PWC	Boating education/ instruction	45	\$38,754	\$14,680	\$9,933	\$67,575
Jetski/ Waverunner/PWC	Trailer maintenance/ repair	45	\$365,561	\$138,820	\$93,019	\$638,103
Jetski/ Waverunner/PWC	Other	45	\$8,580	\$8,530	-\$8,166	\$25,326
Jetski/ Waverunner/PWC	Seasonal slip/ mooring rental	45	\$589,134	\$264,022	\$70,787	\$1,107,480
Jetski/ Waverunner/PWC	New and/or replacement electronics	45	\$23,357	\$14,143	-\$4,410	\$51,123
Jetski/ Waverunner/PWC	Winterization and off-season storage	45	\$844,204	\$243,214	\$366,708	\$1,321,700
Jetski/ Waverunner/PWC	New and/or replacement sails/rigging	45	\$0	\$0	\$0	\$0
Jetski/ Waverunner/PWC	Put-in/haul-out charges	45	\$320,434	\$103,751	\$116,742	\$524,127
Jetski/ Waverunner/PWC	Boating clothing	45	\$338,754	\$89,714	\$162,621	\$514,887
Jetski/ Waverunner/PWC	Boat and/or towing insurance	45	\$673,298	\$200,286	\$280,082	\$1,066,514
Jetski/ Waverunner/PWC	Fishing equipment	45	\$77,657	\$37,104	\$4,811	\$150,502
Jetski/ Waverunner/PWC	Taxes/ registration fees	45	\$256,786	\$54,031	\$150,708	\$362,863
Jetski/ Waverunner/PWC	Water skiing equipment	45	\$145,915	\$51,293	\$45,213	\$246,616
Jetski/ Waverunner/PWC	Purchase of boat	45	\$11,065,739	\$5,124,564	\$1,004,819	\$21,126,660
Jetski/ Waverunner/PWC	Scuba diving equipment	45	\$535,722	\$369,186	-\$189,092	\$1,260,536
Jetski/ Waverunner/PWC	Annual boat loan payment	45	\$956,060	\$555,687	-\$134,905	\$2,047,026
Jetski/ Waverunner/PWC	Other boating supplies	45	\$701,516	\$291,321	\$129,572	\$1,273,459
Jetski/ Waverunner/PWC	Hull repair	45	\$0	\$0	\$0	\$0
Jetski/ Waverunner/PWC	Race/ Regatta/ tournament fees	45	\$14,373	\$14,233	-\$13,569	\$42,316
Jetski/ Waverunner/PWC	Bottom paint	45	\$31,741	\$20,948	-\$9,385	\$72,867
Jetski/ Waverunner/PWC	Boat club/ association feeds	45	\$6,864	\$6,824	-\$6,533	\$20,261
Jetski/ Waverunner/PWC	Total annual expenditure	45	\$17,977,177	\$6,361,531	\$5,487,752	\$30,466,601

Table 1-20b (Cont' d):

Question 23: Please estimate your ANNUAL Boat Related Expenses in New Jersey during 2006 for the boat for you use most frequently: Please include expenditures that you actually made in 2006.

Most Frequently Used Boat	Category	Frequency of Responses	Total	StdErr	95% CI	
					Lower Bound	Upper Bound
Rowboat/canoe/kayak	Engine maintenance repair	36	\$183,577	\$94,111	-\$1,215	\$368,370
Rowboat/canoe/kayak	Boater education	36	\$5,563	\$5,527	-\$5,291	\$16,416
Rowboat/canoe/kayak	Electronic/ electrical repair	36	\$17,789	\$17,020	-\$15,632	\$51,210
Rowboat/canoe/kayak	Boating education/ instruction	36	\$65,481	\$44,046	-\$21,006	\$151,968
Rowboat/canoe/kayak	Trailer maintenance/ repair	36	\$138,569	\$55,493	\$29,606	\$247,531
Rowboat/canoe/kayak	Other	36	\$464,023	\$426,378	-\$373,193	\$1,301,239
Rowboat/canoe/kayak	Seasonal slip/ mooring rental	36	\$228,461	\$211,120	-\$186,084	\$643,007
Rowboat/canoe/kayak	New and/or replacement electronics	36	\$292,774	\$116,673	\$63,680	\$521,868
Rowboat/canoe/kayak	Winterization and off-season storage	36	\$152,162	\$144,637	-\$131,840	\$436,164
Rowboat/canoe/kayak	New and/or replacement sails/ rigging	36	\$59,904	\$59,526	-\$56,978	\$176,786
Rowboat/canoe/kayak	Put-in/haul-out charges	36	\$60,358	\$34,514	-\$7,412	\$128,128
Rowboat/canoe/kayak	Boating clothing	36	\$103,838	\$47,926	\$9,732	\$197,943
Rowboat/canoe/kayak	Boat and/or towing insurance	36	\$259,321	\$132,068	-\$1	\$518,643
Rowboat/canoe/kayak	Fishing equipment	36	\$672,665	\$165,251	\$348,185	\$997,145
Rowboat/canoe/kayak	Taxes/ registration fees	36	\$144,416	\$28,577	\$88,303	\$200,528
Rowboat/canoe/kayak	Water skiing equipment	36	\$2,358	\$2,337	-\$2,232	\$6,947
Rowboat/canoe/kayak	Purchase of boat	36	\$0	\$0	\$0	\$0
Rowboat/canoe/kayak	Scuba diving equipment	36	\$55,625	\$55,274	-\$52,908	\$164,158
Rowboat/canoe/kayak	Annual boat loan payment	36	\$2,652	\$2,632	-\$2,515	\$7,820
Rowboat/canoe/kayak	Other boating supplies	36	\$193,436	\$93,545	\$9,755	\$377,117
Rowboat/canoe/kayak	Hull repair	36	\$55,070	\$38,371	-\$20,274	\$130,413
Rowboat/canoe/kayak	Race/ Regatta/ tournament fees	36	\$21,679	\$21,622	-\$20,777	\$64,135
Rowboat/canoe/kayak	Bottom paint	36	\$44,313	\$34,967	-\$24,346	\$112,973
Rowboat/canoe/kayak	Boat club/ association feeds	36	\$24,070	\$15,625	-\$6,611	\$54,751
Rowboat/canoe/kayak	Total annual expenditure	36	\$3,248,102	\$1,142,988	\$1,003,783	\$5,492,420

By studying total estimated annual boat related expenses by category of most frequently used boat, one can see differences across the categories. Respondents who use smaller boats on a most frequently occurring basis, did not have loan payments ranked as the number three expense item. Winterization and off-season storage was the third ranked expense category for owners of *powerboats and sailboats less than 26 feet in length*. Some expense values for respondents who cited rowboat/canoe/kayak as their most frequently used boat are unexpected. For example, spending is observed for the engine maintenance repair expense category. This is suggestive that some respondents may not have understood that the question was in relation to their most frequently used boat. Within each “most frequently used boat” category, one or more expense categories have confidence intervals that are so large that the lower bound exceeds the lower limit of zero dollars. In these cases, very few answers had non-zero values. Estimates of totals are not reliable in these instances.

Table 1-20c:

Question 23: Please estimate your ANNUAL Boat Related Expenses in New Jersey during 2006 for the boat for you use most frequently: Please include expenditures that you actually made in 2006.

Category	Frequency of Responses	Average	StdErr	95% CI	
				Lower Bound	Upper Bound
Engine maintenance repair	998	\$343	\$40	\$264	\$421
Boater education	998	\$19	\$2	\$15	\$22
Electronic/electrical repair	998	\$33	\$4	\$25	\$42
Boating education/instruction	998	\$22	\$5	\$13	\$31
Trailer maintenance/repair	998	\$55	\$8	\$41	\$70
Other	998	\$51	\$12	\$27	\$74
Seasonal slip/mooring rental	998	\$726	\$41	\$645	\$808
New and/or replacement electronics	998	\$189	\$21	\$148	\$229
Winterization and off-season storage	998	\$388	\$18	\$353	\$424
New and/or replacement sails/rigging	998	\$18	\$4	\$9	\$26
Put-in/haul-out charges	998	\$81	\$7	\$67	\$95
Boating clothing	998	\$61	\$4	\$54	\$68
Boat and/or towing insurance	998	\$292	\$12	\$267	\$316
Fishing equipment	998	\$217	\$15	\$188	\$246
Taxes/registration fees	998	\$64	\$7	\$50	\$79
Water skiing equipment	998	\$21	\$3	\$16	\$27
Purchase of boat	998	\$2,980	\$419	\$2,157	\$3,803
Scuba diving equipment	998	\$63	\$27	\$10	\$116
Annual boat loan payment	998	\$444	\$52	\$342	\$547
Other boating supplies	998	\$93	\$7	\$79	\$106
Hull repair	998	\$32	\$7	\$18	\$46
Race/Regatta/tournament fees	998	\$25	\$6	\$14	\$36
Bottom paint	998	\$74	\$5	\$65	\$84
Boat club/association feeds	998	\$48	\$9	\$31	\$65
Total annual expenditure	998	\$6,340	\$464	\$5,430	\$7,250

Respondents were asked to enter expenses by category for annual boat related expenses on most their frequently used boat. The total annual boat related expense per respondent was derived by adding each respondent's components together. 998 out of 1,078 respondents provided useable responses. The estimated averages per category are displayed in table 1-20c. Based on the patterns of responses in the survey, it is estimated New Jersey boaters spent on average $6,340 \pm 910$ dollars on total annual boat related expenses. The category with the largest total is for the *purchase of a boat* at $2,980 \pm 823$ followed by expense for *seasonal slip/mooring rental* at 726 ± 81 dollars. Given the large total estimated expense for boat purchase, it is not surprising that the third ranked expense comes from annual boat loan payment at 444 ± 102 dollars.

Table 1-20d:

Question 23: Please estimate your ANNUAL Boat Related Expenses in New Jersey during 2006 for the boat for you use most frequently: Please include expenditures that you actually made in 2006.

Most Frequently Used Boat	Category	Frequency of Responses	Average	StdErr	95% CI	
					Lower Bound	Upper Bound
Powerboat less than 26 feet in length	Engine maintenance repair	732	\$308	\$46	\$219	\$397
Powerboat less than 26 feet in length	Boater education	732	\$19	\$2	\$15	\$23
Powerboat less than 26 feet in length	Electronic/electrical repair	732	\$29	\$4	\$20	\$38
Powerboat less than 26 feet in length	Boating education/ instruction	732	\$22	\$6	\$10	\$33
Powerboat less than 26 feet in length	Trailer maintenance/repair	732	\$58	\$9	\$40	\$76
Powerboat less than 26 feet in length	Other	732	\$32	\$8	\$16	\$47
Powerboat less than 26 feet in length	Seasonal slip/mooring rental	732	\$596	\$37	\$523	\$669
Powerboat less than 26 feet in length	New and/or replacement electronics	732	\$139	\$14	\$112	\$166
Powerboat less than 26 feet in length	Winterization and off-season storage	732	\$314	\$19	\$277	\$351
Powerboat less than 26 feet in length	New and/or replacement sails/rigging	732	\$5	\$1	\$3	\$7
Powerboat less than 26 feet in length	Put-in/haul-out charges	732	\$69	\$8	\$54	\$84
Powerboat less than 26 feet in length	Boating clothing	732	\$52	\$4	\$45	\$60
Powerboat less than 26 feet in length	Boat and/or towing insurance	732	\$251	\$11	\$229	\$273
Powerboat less than 26 feet in length	Fishing equipment	732	\$214	\$15	\$185	\$242
Powerboat less than 26 feet in length	Taxes/registration fees	732	\$61	\$8	\$45	\$78
Powerboat less than 26 feet in length	Water skiing equipment	732	\$24	\$3	\$17	\$30
Powerboat less than 26 feet in length	Purchase of boat	732	\$2,210	\$362	\$1,499	\$2,921
Powerboat less than 26 feet in length	Scuba diving equipment	732	\$59	\$32	-\$4	\$122
Powerboat less than 26 feet in length	Annual boat loan payment	732	\$311	\$47	\$219	\$403
Powerboat less than 26 feet in length	Other boating supplies	732	\$77	\$6	\$64	\$89
Powerboat less than 26 feet in length	Hull repair	732	\$21	\$6	\$10	\$33
Powerboat less than 26 feet in length	Race/Regatta/ tournament fees	732	\$22	\$6	\$10	\$34
Powerboat less than 26 feet in length	Bottom paint	732	\$60	\$4	\$53	\$68
Powerboat less than 26 feet in length	Boat club/association feeds	732	\$43	\$10	\$23	\$62
Powerboat less than 26 feet in length	Total annual expenditure	732	\$4,996	\$410	\$4,191	\$5,801

Table 1-20d (Cont' d):

Question 23: Please estimate your ANNUAL Boat Related Expenses in New Jersey during 2006 for the boat for you use most frequently: Please include expenditures that you actually made in 2006.

Most Frequently Used Boat	Category	Frequency of Responses	Average	StdErr	95% CI	
					Lower Bound	Upper Bound
Powerboat 26 feet or greater in length	Engine maintenance repair	127	\$917	\$189	\$545	\$1,288
Powerboat 26 feet or greater in length	Boater education	127	\$27	\$5	\$18	\$36
Powerboat 26 feet or greater in length	Electronic/electrical repair	127	\$99	\$24	\$51	\$146
Powerboat 26 feet or greater in length	Boating education/instruction	127	\$36	\$5	\$26	\$46
Powerboat 26 feet or greater in length	Trailer maintenance/repair	127	\$52	\$20	\$14	\$91
Powerboat 26 feet or greater in length	Other	127	\$226	\$107	\$16	\$436
Powerboat 26 feet or greater in length	Seasonal slip/mooring rental	127	\$1,850	\$176	\$1,503	\$2,197
Powerboat 26 feet or greater in length	New and/or replacement electronics	127	\$760	\$186	\$394	\$1,125
Powerboat 26 feet or greater in length	Winterization and off-season storage	127	\$1,140	\$91	\$962	\$1,318
Powerboat 26 feet or greater in length	New and/or replacement sails/rigging	127	\$31	\$22	-\$12	\$74
Powerboat 26 feet or greater in length	Put-in/haul-out charges	127	\$211	\$34	\$145	\$277
Powerboat 26 feet or greater in length	Boating clothing	127	\$134	\$18	\$98	\$170
Powerboat 26 feet or greater in length	Boat and/or towing insurance	127	\$843	\$85	\$675	\$1,010
Powerboat 26 feet or greater in length	Fishing equipment	127	\$473	\$99	\$278	\$667
Powerboat 26 feet or greater in length	Taxes/registration fees	127	\$123	\$39	\$46	\$199
Powerboat 26 feet or greater in length	Water skiing equipment	127	\$15	\$4	\$8	\$23
Powerboat 26 feet or greater in length	Purchase of boat	127	\$12,162	\$3,226	\$5,819	\$18,506
Powerboat 26 feet or greater in length	Scuba diving equipment	127	\$136	\$102	-\$64	\$336
Powerboat 26 feet or greater in length	Annual boat loan payment	127	\$1,917	\$381	\$1,168	\$2,667
Powerboat 26 feet or greater in length	Other boating supplies	127	\$248	\$44	\$162	\$333
Powerboat 26 feet or greater in length	Hull repair	127	\$137	\$58	\$23	\$251
Powerboat 26 feet or greater in length	Race/Regatta/tournament fees	127	\$76	\$31	\$16	\$137
Powerboat 26 feet or greater in length	Bottom paint	127	\$227	\$36	\$156	\$297
Powerboat 26 feet or greater in length	Boat club/ association feeds	127	\$75	\$26	\$24	\$126
Powerboat 26 feet or greater in length	Total annual expenditure	127	\$21,914	\$3,407	\$15,214	\$28,613

Table 1-20d (Cont' d):

Question 23: Please estimate your ANNUAL Boat Related Expenses in New Jersey during 2006 for the boat for you use most frequently: Please include expenditures that you actually made in 2006.

Most Frequently Used Boat	Category	Frequency of Responses	Average	StdErr	95% CI	
					Lower Bound	Upper Bound
Sailboat less than 26 feet in length	Engine maintenance repair	33	\$172	\$76	\$22	\$322
Sailboat less than 26 feet in length	Boater education	33	\$11	\$7	-\$2	\$25
Sailboat less than 26 feet in length	Electronic/electrical repair	33	\$22	\$10	\$1	\$42
Sailboat less than 26 feet in length	Boating education/instruction	33	\$18	\$5	\$8	\$28
Sailboat less than 26 feet in length	Trailer maintenance/repair	33	\$66	\$25	\$16	\$115
Sailboat less than 26 feet in length	Other	33	\$15	\$11	-\$6	\$36
Sailboat less than 26 feet in length	Seasonal slip/mooring rental	33	\$795	\$242	\$319	\$1,271
Sailboat less than 26 feet in length	New and/or replacement electronics	33	\$114	\$42	\$31	\$197
Sailboat less than 26 feet in length	Winterization and off-season storage	33	\$421	\$151	\$125	\$718
Sailboat less than 26 feet in length	New and/or replacement sails/ rigging	33	\$164	\$88	-\$9	\$338
Sailboat less than 26 feet in length	Put-in/haul-out charges	33	\$116	\$37	\$43	\$190
Sailboat less than 26 feet in length	Boating clothing	33	\$78	\$22	\$35	\$120
Sailboat less than 26 feet in length	Boat and/or towing insurance	33	\$155	\$35	\$86	\$225
Sailboat less than 26 feet in length	Fishing equipment	33	\$35	\$17	\$2	\$68
Sailboat less than 26 feet in length	Taxes/registration fees	33	\$47	\$9	\$29	\$65
Sailboat less than 26 feet in length	Water skiing equipment	33	\$22	\$11	\$0	\$44
Sailboat less than 26 feet in length	Purchase of boat	33	\$1,592	\$1,418	-\$1,193	\$4,376
Sailboat less than 26 feet in length	Scuba diving equipment	33	\$10	\$9	-\$9	\$28
Sailboat less than 26 feet in length	Annual boat loan payment	33	\$0	\$0	\$0	\$0
Sailboat less than 26 feet in length	Other boating supplies	33	\$51	\$13	\$26	\$76
Sailboat less than 26 feet in length	Hull repair	33	\$34	\$19	-\$4	\$71
Sailboat less than 26 feet in length	Race/Regatta/ tournament fees	33	\$26	\$16	-\$6	\$58
Sailboat less than 26 feet in length	Bottom paint	33	\$62	\$16	\$30	\$93
Sailboat less than 26 feet in length	Boat club/ association feeds	33	\$131	\$56	\$21	\$241
Sailboat less than 26 feet in length	Total annual expenditure	33	\$4,155	\$1,393	\$1,418	\$6,892

Table 1-20d (Cont' d):

Question 23: Please estimate your ANNUAL Boat Related Expenses in New Jersey during 2006 for the boat for you use most frequently: Please include expenditures that you actually made in 2006.

Most Frequently Used Boat	Category	Frequency of Responses	Average	StdErr	95% CI	
					Lower Bound	Upper Bound
Sailboat 26 feet or greater in length	Engine maintenance repair	25	\$349	\$142	\$70	\$629
Sailboat 26 feet or greater in length	Boater education	25	\$1	\$1	-\$1	\$4
Sailboat 26 feet or greater in length	Electronic/electrical repair	25	\$24	\$9	\$6	\$42
Sailboat 26 feet or greater in length	Boating education/instruction	25	\$39	\$8	\$23	\$55
Sailboat 26 feet or greater in length	Trailer maintenance/repair	25	\$0	\$0	\$0	\$1
Sailboat 26 feet or greater in length	Other	25	\$88	\$63	-\$35	\$212
Sailboat 26 feet or greater in length	Seasonal slip/ mooring rental	25	\$3,553	\$1,275	\$1,039	\$6,066
Sailboat 26 feet or greater in length	New and/or replacement electronics	25	\$234	\$63	\$111	\$358
Sailboat 26 feet or greater in length	Winterization and off-season storage	25	\$1,089	\$227	\$642	\$1,536
Sailboat 26 feet or greater in length	New and/or replacement sails/ rigging	25	\$336	\$119	\$101	\$570
Sailboat 26 feet or greater in length	Put-in/haul-out charges	25	\$77	\$27	\$23	\$130
Sailboat 26 feet or greater in length	Boating clothing	25	\$130	\$27	\$77	\$183
Sailboat 26 feet or greater in length	Boat and/or towing insurance	25	\$389	\$82	\$229	\$550
Sailboat 26 feet or greater in length	Fishing equipment	25	\$35	\$12	\$10	\$59
Sailboat 26 feet or greater in length	Taxes/registration fees	25	\$71	\$13	\$44	\$97
Sailboat 26 feet or greater in length	Water skiing equipment	25	\$0	\$0	\$0	\$0
Sailboat 26 feet or greater in length	Purchase of boat	25	\$518	\$505	-\$478	\$1,513
Sailboat 26 feet or greater in length	Scuba diving equipment	25	\$2	\$2	-\$2	\$7
Sailboat 26 feet or greater in length	Annual boat loan payment	25	\$1,045	\$410	\$238	\$1,853
Sailboat 26 feet or greater in length	Other boating supplies	25	\$122	\$33	\$58	\$187
Sailboat 26 feet or greater in length	Hull repair	25	\$67	\$21	\$25	\$109
Sailboat 26 feet or greater in length	Race/Regatta/ tournament fees	25	\$16	\$13	-\$10	\$42
Sailboat 26 feet or greater in length	Bottom paint	25	\$233	\$43	\$149	\$318
Sailboat 26 feet or greater in length	Boat club/ association feeds	25	\$210	\$111	-\$9	\$429
Sailboat 26 feet or greater in length	Total annual expenditure	25	\$8,629	\$1,413	\$5,844	\$11,415

Table 1-20d (Cont' d):

Question 23: Please estimate your ANNUAL Boat Related Expenses in New Jersey during 2006 for the boat for you use most frequently: Please include expenditures that you actually made in 2006.

Most Frequently Used Boat	Category	Frequency of Responses	Average	StdErr	95% CI	
					Lower Bound	Upper Bound
Jetski/Waverunner/PWC	Engine maintenance repair	45	\$125	\$33	\$59	\$191
Jetski/Waverunner/PWC	Boater education	45	\$20	\$9	\$3	\$38
Jetski/Waverunner/PWC	Electronic/electrical repair	45	\$10	\$6	-\$2	\$22
Jetski/Waverunner/PWC	Boating education/instruction	45	\$6	\$2	\$2	\$11
Jetski/Waverunner/PWC	Trailer maintenance/repair	45	\$58	\$19	\$21	\$95
Jetski/Waverunner/PWC	Other	45	\$1	\$1	-\$1	\$4
Jetski/Waverunner/PWC	Seasonal slip/mooring rental	45	\$93	\$40	\$14	\$172
Jetski/Waverunner/PWC	New and/or replacement electronics	45	\$4	\$2	-\$1	\$8
Jetski/Waverunner/PWC	Winterization and off-season storage	45	\$134	\$33	\$69	\$199
Jetski/Waverunner/PWC	New and/or replacement sails/rigging	45	\$0	\$0	\$0	\$0
Jetski/Waverunner/PWC	Put-in/haul-out charges	45	\$51	\$15	\$22	\$80
Jetski/Waverunner/PWC	Boating clothing	45	\$54	\$12	\$30	\$77
Jetski/Waverunner/PWC	Boat and/or towing insurance	45	\$107	\$26	\$55	\$158
Jetski/Waverunner/PWC	Fishing equipment	45	\$12	\$6	\$1	\$24
Jetski/Waverunner/PWC	Taxes/registration fees	45	\$41	\$5	\$31	\$51
Jetski/Waverunner/PWC	Water skiing equipment	45	\$23	\$8	\$8	\$38
Jetski/Waverunner/PWC	Purchase of boat	45	\$1,752	\$709	\$359	\$3,144
Jetski/Waverunner/PWC	Scuba diving equipment	45	\$85	\$55	-\$24	\$193
Jetski/Waverunner/PWC	Annual boat loan payment	45	\$151	\$83	-\$12	\$315
Jetski/Waverunner/PWC	Other boating supplies	45	\$111	\$42	\$28	\$194
Jetski/Waverunner/PWC	Hull repair	45	\$0	\$0	\$0	\$0
Jetski/Waverunner/PWC	Race/Regatta/ tournament fees	45	\$2	\$2	-\$2	\$7
Jetski/Waverunner/PWC	Bottom paint	45	\$5	\$3	-\$2	\$12
Jetski/Waverunner/PWC	Boat club/association feeds	45	\$1	\$1	-\$1	\$3
Jetski/Waverunner/PWC	Total annual expenditure	45	\$2,846	\$825	\$1,225	\$4,466

Table 1-20d (Cont' d):

Question 23: Please estimate your ANNUAL Boat Related Expenses in New Jersey during 2006 for the boat for you use most frequently: Please include expenditures that you actually made in 2006.

Most Frequently Used Boat	Category	Frequency of Responses	Average	StdErr	95% CI	
					Lower Bound	Upper Bound
Rowboat/canoe/kayak	Engine maintenance repair	36	\$33	\$17	-\$1	\$66
Rowboat/canoe/kayak	Boater education	36	\$1	\$1	-\$1	\$3
Rowboat/canoe/kayak	Electronic/electrical repair	36	\$3	\$3	-\$3	\$9
Rowboat/canoe/kayak	Boating education/instruction	36	\$12	\$8	-\$4	\$27
Rowboat/canoe/kayak	Trailer maintenance/repair	36	\$25	\$9	\$6	\$43
Rowboat/canoe/kayak	Other	36	\$82	\$76	-\$67	\$232
Rowboat/canoe/kayak	Seasonal slip/mooring rental	36	\$41	\$38	-\$33	\$114
Rowboat/canoe/kayak	New and/or replacement electronics	36	\$52	\$19	\$15	\$90
Rowboat/canoe/kayak	Winterization and off-season storage	36	\$27	\$26	-\$24	\$78
Rowboat/canoe/kayak	New and/or replacement sails/rigging	36	\$11	\$11	-\$10	\$31
Rowboat/canoe/kayak	Put-in/haul-out charges	36	\$11	\$6	-\$1	\$22
Rowboat/canoe/kayak	Boating clothing	36	\$18	\$8	\$3	\$33
Rowboat/canoe/kayak	Boat and/or towing insurance	36	\$46	\$23	\$1	\$92
Rowboat/canoe/kayak	Fishing equipment	36	\$120	\$22	\$75	\$164
Rowboat/canoe/kayak	Taxes/registration fees	36	\$26	\$3	\$20	\$31
Rowboat/canoe/kayak	Water skiing equipment	36	\$0	\$0	\$0	\$1
Rowboat/canoe/kayak	Purchase of boat	36	\$0	\$0	\$0	\$0
Rowboat/canoe/kayak	Scuba diving equipment	36	\$10	\$10	-\$9	\$29
Rowboat/canoe/kayak	Annual boat loan payment	36	\$0	\$0	\$0	\$1
Rowboat/canoe/kayak	Other boating supplies	36	\$34	\$16	\$2	\$67
Rowboat/canoe/kayak	Hull repair	36	\$10	\$7	-\$3	\$23
Rowboat/canoe/kayak	Race/Regatta/ tournament fees	36	\$4	\$4	-\$4	\$11
Rowboat/canoe/kayak	Bottom paint	36	\$8	\$6	-\$4	\$20
Rowboat/canoe/kayak	Boat club/association feeds	36	\$4	\$3	-\$1	\$10
Rowboat/canoe/kayak	Total annual expenditure	36	\$577	\$194	\$196	\$959

By studying average estimated annual boat related expenses by category of most frequently used boat, one can see differences across the categories. Respondents who use smaller boats on a most frequently occurring basis, did not have loan payments ranked as the number three expense item. Winterization and off-season storage was the third ranked expense category for owners of *powerboats and sailboats less than 26 feet in length*. Some expense values for respondents who cited rowboat/canoe/kayak as their most frequently used boat are unexpected. For example, spending is observed for the engine maintenance repair expense category. This is suggestive that some respondents may not have understood that the question was in relation to their most frequently used boat. Within each “most frequently used boat” category, one or more expense categories have

confidence intervals that are so large that the lower bound exceeds the lower limit of zero dollars. In these cases, very few answers had non-zero values. Estimates of averages are not reliable in these instances.

Table 1-21:
Question 24: What is your age?

Category	Frequency of Responses	Average (Percent)	StdErr	95% CI	
				Lower Bound	Upper Bound
16-25	6	0.37%	0.17%	0.05%	0.70%
26-35	61	6.01%	0.80%	4.43%	7.58%
36-45	200	17.86%	1.25%	15.41%	20.32%
46-55	343	32.59%	1.60%	29.45%	35.73%
56-65	283	27.29%	1.52%	24.31%	30.28%
66-75	126	11.78%	1.07%	9.68%	13.88%
76-85 (or older)	39	4.09%	0.70%	2.73%	5.46%

Respondents were asked to indicate their age category from a set of choices. 1,058 out of 1,078 respondents provided useable responses. The percentages of the choices are displayed in table 1-21. Based on the patterns of responses in the survey, it is estimated that 32.6 ± 3.1 percent of New Jersey boaters are aged 46 to 55 years.

Table 1-22:
Question 25: Are you Male or Female?

Response	Frequency of Responses	Percent	StdErr	95% CI	
				Lower Bound	Upper Bound
Male	953	91.32%	1.00%	89.36%	93.28%
Female	83	8.68%	1.00%	6.72%	10.64%

Respondents were asked to indicate their gender. 1,036 out of 1,078 respondents provided useable responses. The percentages of the choices are displayed in table 1-22. Based on the patterns of responses in the survey, it is estimated that 91.3 ± 2.0 percent of New Jersey boaters are male.

Table 1-23:
Question 26: What is your current marital status?

Response	Frequency of Responses	Percent	StdErr	95% CI	
				Lower Bound	Upper Bound
Married	775	78.88%	1.44%	76.06%	81.70%
Single	105	10.26%	1.04%	8.22%	12.31%
Divorced	74	7.68%	0.96%	5.79%	9.57%
Widowed	28	3.17%	0.61%	1.98%	4.37%

Respondents were asked to indicate their marital status from a set of choices. 982 out of 1,078 respondents provided useable responses. The percentages of the choices are displayed in table 1-23. Based on the patterns of responses in the survey, it is estimated that 78.9 ± 2.8 percent of New Jersey boaters are married.

Table 1-24a:
Question 27: What is the number of persons in your household (including yourself) with the following age ranges?

Category	Frequency of Responses	Total	StdErr	95% CI	
				Lower Bound	Upper Bound
0 - 10 years	1,078	40,807	3,220	34,489	47,126
11-20 years	1,078	54,663	3,680	47,441	61,884
21-30 years	1,078	36,719	2,991	30,849	42,588
31-40 years	1,078	35,167	2,899	29,478	40,856
41-50 years	1,078	74,781	4,034	66,864	82,697
51-60 years	1,078	86,680	5,228	76,421	96,938
61-70 years	1,078	49,858	3,277	43,428	56,287
71-80 years	1,078	20,462	2,412	15,729	25,196
Total in household	1,078	399,136	8,072	383,297	414,975

Respondents were asked to indicate the number of persons in their households based on age category. 1,000 respondents provided directly useable responses. The remaining 78 were assumed to have one person aged 51-60 years. After imputation, 1,078 responses had values for the number of persons per category. The total number of persons living in the household was derived by tallying individual age category counts. The total estimated numbers per category are displayed in table 1-24a. Based on the patterns of responses in the survey, it is estimated that $399,136 \pm 15,839$ persons live in boater households.

Table 1-24b:

Question 27: What is the number of persons in your household (including yourself) with the following age ranges?

Category	Frequency of Responses	Average	StdErr	95% CI	
				Lower Bound	Upper Bound
0 - 10 years	1,078	0.28	0.02	0.23	0.32
11-20 years	1,078	0.37	0.02	0.32	0.42
21-30 years	1,078	0.25	0.02	0.21	0.29
31-40 years	1,078	0.24	0.02	0.20	0.28
41-50 years	1,078	0.50	0.03	0.45	0.56
51-60 years	1,078	0.59	0.04	0.52	0.65
61-70 years	1,078	0.34	0.02	0.29	0.38
71-80 years	1,078	0.14	0.02	0.11	0.17
Total in household	1,078	2.69	0.05	2.59	2.80

Respondents were asked to indicate the number of persons in their households based on age category. The total number of persons living in the household was derived by tallying individual age category counts. 1,000 respondents provided directly useable responses. The remaining 78 were assumed to have one person aged 51-60 years. After imputation, 1,078 responses had values for number of persons per category. The estimates of average number of persons per category are displayed in table 1-24b. Based on the patterns of responses in the survey, it is estimated that there are 2.7 ± 0.11 persons living in boater households.

Table 1-25:

Question 28: What is your employment status?

Response	Frequency of Responses	Percent	StdErr	95% CI	
				Lower Bound	Upper Bound
Full-time	698	69.37%	1.62%	66.20%	72.54%
Retired	225	22.94%	1.48%	20.03%	25.85%
Part-time	56	5.77%	0.83%	4.13%	7.40%
Unemployed	19	1.92%	0.49%	0.96%	2.89%

Respondents were asked to indicate their employment status from a set of choices. 998 out of 1,078 respondents provided useable responses. The percentages of the choices are displayed in table 1-25. Based on the patterns of responses in the survey, it is estimated that 69.4 ± 3.2 percent of New Jersey boaters are employed on a *full-time* basis.

Table 1-26:

Question 29: What is your total annual household income before taxes?

Income Category	Frequency of Responses	Percent	StdErr	95% CI	
				Lower Bound	Upper Bound
20,000 or less	14	1.59%	0.47%	0.67%	2.51%
21,000 to 30,000	38	4.39%	0.74%	2.94%	5.85%
31,000 to 40,000	46	5.21%	0.84%	3.57%	6.86%
41,000 to 50,000	72	7.48%	0.92%	5.67%	9.30%
51,000 to 60,000	79	8.61%	1.02%	6.60%	10.62%
61,000 to 70,000	69	7.55%	0.97%	5.65%	9.45%
71,000 to 80,000	94	10.16%	1.07%	8.05%	12.26%
81,000 to 90,000	55	5.47%	0.80%	3.89%	7.04%
91,000 to 100,000	100	11.37%	1.13%	9.14%	13.60%
101,000 to 110,000	68	7.30%	0.95%	5.43%	9.17%
111,000 to 120,000	47	5.51%	0.84%	3.85%	7.16%
121,000 to 130,000	35	3.40%	0.64%	2.14%	4.66%
131,000 and above	240	21.97%	1.35%	19.31%	24.63%

Respondents were asked to indicate their annual household income before taxes from a set of choices. 957 out of 1,078 respondents provided useable responses. The percentages of the choices are displayed in table 1-26. Based on the patterns of responses in the survey, it is estimated that 22.0 ± 2.7 percent of New Jersey boaters have household incomes *131,000 dollars or greater*.

**Table 1-27:
Comments**

Question	Response	Frequency of Responses	Percent	StdErr	95% CI	
					Lower Bound	Upper Bound
SAFETY	Yes	125	11.15%	1.04%	9.11%	13.20%
SAFETY	No	953	88.85%	1.04%	86.80%	90.89%
INEXPBOATERS	Yes	93	8.60%	0.94%	6.75%	10.45%
INEXPBOATERS	No	985	91.40%	0.94%	89.55%	93.25%
ALCOHOLUSE	Yes	20	2.07%	0.45%	1.19%	2.94%
ALCOHOLUSE	No	1058	97.93%	0.45%	97.06%	98.81%
LACKENFORCEMENT	Yes	42	3.99%	0.66%	2.69%	5.29%
LACKENFORCEMENT	No	1036	96.01%	0.66%	94.71%	97.31%
JETSKIS	Yes	34	3.21%	0.57%	2.08%	4.33%
JETSKIS	No	1044	96.79%	0.57%	95.67%	97.92%
POORACCESS	Yes	62	5.19%	0.74%	3.74%	6.65%
POORACCESS	No	1016	94.81%	0.74%	93.35%	96.26%
LAUNCHES	Yes	9	0.94%	0.35%	0.26%	1.62%
LAUNCHES	No	1069	99.06%	0.35%	98.38%	99.74%
POORCONDITION	Yes	26	2.51%	0.54%	1.46%	3.57%
POORCONDITION	No	1052	97.49%	0.54%	96.43%	98.54%
FEWMARINAS	Yes	45	3.72%	0.63%	2.48%	4.96%
FEWMARINAS	No	1033	96.28%	0.63%	95.04%	97.52%
NAVAIDS	Yes	26	2.25%	0.52%	1.23%	3.26%
NAVAIDS	No	1052	97.75%	0.52%	96.74%	98.77%
SHALLOWCHANN	Yes	71	5.78%	0.75%	4.31%	7.25%
SHALLOWCHANN	No	1007	94.22%	0.75%	92.75%	95.69%
OVERCROWDED	Yes	55	5.33%	0.77%	3.82%	6.85%
OVERCROWDED	No	1023	94.67%	0.77%	93.15%	96.18%
FISHPOPS	Yes	50	4.72%	0.71%	3.33%	6.11%
FISHPOPS	No	1028	95.28%	0.71%	93.89%	96.67%
FISHRESTRICTIONS	Yes	104	9.98%	1.01%	8.00%	11.96%
FISHRESTRICTIONS	No	974	90.02%	1.01%	88.04%	92.00%
REGULATIONS	Yes	98	8.92%	0.95%	7.06%	10.79%
REGULATIONS	No	980	91.08%	0.95%	89.21%	92.94%
ETHANOLREQ	Yes	18	1.56%	0.42%	0.74%	2.38%
ETHANOLREQ	No	1060	98.44%	0.42%	97.62%	99.26%
POLLUTION	Yes	109	9.47%	0.94%	7.62%	11.31%
POLLUTION	No	969	90.53%	0.94%	88.69%	92.38%
COSTS: RAMP	Yes	26	2.57%	0.54%	1.50%	3.63%
COSTS: RAMP	No	1052	97.43%	0.54%	96.37%	98.50%
COSTS: TAXES	Yes	26	2.45%	0.53%	1.40%	3.50%
COSTS: TAXES	No	1052	97.55%	0.53%	96.50%	98.60%
COSTS: FUEL	Yes	97	8.83%	0.94%	6.99%	10.67%
COSTS: FUEL	No	981	91.17%	0.94%	89.33%	93.01%
COSTS: MARINA	Yes	26	2.56%	0.57%	1.45%	3.67%
COSTS: MARINA	No	1052	97.44%	0.57%	96.33%	98.55%
OTHER	Yes	32	2.80%	0.54%	1.74%	3.85%
OTHER	No	1046	97.20%	0.54%	96.15%	98.26%

Respondents were given the opportunity to provide free flow comments as to the most important issues facing New Jersey boaters. Responses were screened and grouped into

major themes described in table 1-27. The most frequently raised issues related to safety, inexperienced boaters, fishing restrictions, regulations and pollution.

2.0 DESCRIPTION OF METHODOLOGY

2.1 Sample Design and Selection

2.1.1 Introduction

2.1.2 Study Population

Based on the New Jersey Boat Registry Motor Vehicles Commission, there are 148,820 persons who have registered boats as of January 2007. This set of boaters represents the study population for which survey estimates are required. Understanding the spending habits and characteristics of these boaters is the objective of the survey. The survey provides a means to estimate the characteristics of the New Jersey boaters without having to interview each boater. Inferences or estimates obtained from the survey pertain to the expenditures, characteristics and attitudes of these boaters. Boaters using water craft of any sort that are not registered in New Jersey either because legislation does not require that particular water craft to be registered or the boat is registered in another state or country are outside the scope of this survey. Their spending habits are not factored into estimates derived from the survey. Table 2-1 below displays the distribution of the study population by county of residence and size of boat. Each sub-population as defined by county of residence and size of boat for the purpose of this survey is referred to as a stratum. Ocean County has the majority of boaters with 15 percent of the total population, followed by Monmouth and Burlington counties with a 10 percent and 7 percent share of the total target boater population respectively. If a boater has more than one boat, a count is given for those boaters with multiple registered boats regardless of size.

Table 2-1:
Distribution of New Jersey Registered Boat Owners by County of Residence and
Boat Size as of January 2007

County	Boat Size	Population Stratum Size
Atlantic	Boat < 26'	6,802
Atlantic	Boat >=26'	544
Atlantic	Multiple Boats	1,287
Bergen	Boat < 26'	6,702
Bergen	Boat >=26'	984
Bergen	Multiple Boats	1,514
Burlington	Boat < 26'	8,164
Burlington	Boat >=26'	908
Burlington	Multiple Boats	1,577
Camden	Boat < 26'	6,055
Camden	Boat >=26'	645
Camden	Multiple Boats	955
Cape May	Boat < 26'	4,032
Cape May	Boat >=26'	460
Cape May	Multiple Boats	939
Cumberland	Boat < 26'	2,676
Cumberland	Boat >=26'	115
Cumberland	Multiple Boats	482
Essex	Boat < 26'	2,943
Essex	Boat >=26'	435
Essex	Multiple Boats	504
Gloucester	Boat < 26'	5,250
Gloucester	Boat >=26'	432
Gloucester	Multiple Boats	943
Hudson	Boat < 26'	1,471
Hudson	Boat >=26'	294
Hudson	Multiple Boats	284
Hunterdon	Boat < 26'	3,002
Hunterdon	Boat >=26'	240
Hunterdon	Multiple Boats	530
Mercer	Boat < 26'	2,636
Mercer	Boat >=26'	281
Mercer	Multiple Boats	504

County	Boat Size	Population Stratum Size
Middlesex	Boat < 26'	6,830
Middlesex	Boat >=26'	838
Middlesex	Multiple Boats	1,134
Monmouth	Boat < 26'	10,623
Monmouth	Boat >=26'	2,003
Monmouth	Multiple Boats	2,225
Morris	Boat < 26'	7,785
Morris	Boat >=26'	709
Morris	Multiple Boats	1,411
Ocean	Boat < 26'	15,724
Ocean	Boat >=26'	2,471
Ocean	Multiple Boats	4,310
Passaic	Boat < 26'	4,564
Passaic	Boat >=26'	350
Passaic	Multiple Boats	616
Salem	Boat < 26'	2,385
Salem	Boat >=26'	128
Salem	Multiple Boats	481
Somerset	Boat < 26'	3,825
Somerset	Boat >=26'	551
Somerset	Multiple Boats	688
Sussex	Boat < 26'	5,700
Sussex	Boat >=26'	158
Sussex	Multiple Boats	946
Union	Boat < 26'	3,335
Union	Boat >=26'	433
Union	Multiple Boats	598
Warren	Boat < 26'	2,493
Warren	Boat >=26'	83
Warren	Multiple Boats	333
Total		148,320

2.1.3 Sampling Unit

The sampling unit for the purpose of the survey is a registered boater on the mailing list obtained from NJMVC. The questionnaire was mailed to the respondent using the address stored within the registry's database. The expectation was that the registered boater would provide the responses to the questionnaire.

2.1.4 Sample Design

To ensure representation of boaters across all counties and boat sizes, sampling was done specifically within each stratum as delineated by county and boat category ($<26'$, $\geq 26'$, or multiple boats owned). By randomly sampling within the available boat size categories and counties, responses from boaters across all boat classes and counties will contribute to overall population estimates derived from the survey. This type of design where a random sample is selected within predefined sub-populations or strata is referred to a stratified sample design.

2.1.5 Allocation of Sample Size over County and Boat Size

The determination of sample size for a survey designed to estimate population averages and totals is set by knowing the target population size, the population variance for a key attribute, desired margin of error for the estimate of interest at a given confidence level, the non-response rate and finally the budget. A key goal of the "Survey" is to estimate the average annual expenditure for all New Jersey registered boaters. Based on a previous 2004 survey of 384 boaters, the sample variance of the average annual expenditures was used to estimate what the variance would be for the 2007 survey. Even though the sample size of the previous survey was very small, its variance estimate provides a guideline.

In the previous survey, the average annual expenditure of a New Jersey boater was found to be \$2,744, with an associated sample standard deviation of \$3,585. This information was used in the following formula to determine the minimum sample size required to achieve a desired level of precision for the average annual expenditure:

$$n \geq \frac{z^2 s^2}{e^2 + \frac{z^2 s^2}{N}}, \text{ where } s^2 \text{ is the sample variance (the square of the sample standard}$$

deviation), e is the desired margin of error of \$202 and $z = 1.96$ is the z-score at the 95 percent significance level) and N is the size of all registered boaters in New Jersey.

Using this formula, it was determined that 1,200 completed surveys were required to achieve a margin of error for the average annual expenditures of \$202 at the 95 percent confidence level. This means that if 1,200 completed surveys were received, the estimate of the average annual expenditures is expected to be accurate to within \$202 of the true value, 19 times out of 20. Given the small sample from which preliminary sample variances were estimated, final margin of errors at a given confidence level for average annual expenditure may be either larger or smaller than anticipated.

If every respondent that received a questionnaire replied, then only 1,200 questionnaires would have to be mailed out in order to meet requirements. Typically, mail-out surveys have a response rate between 30 to 40 percent. With this in mind, a sample of 4,000 questionnaires is mailed out in order to have at least 1,200 returned questionnaires. Table 2 displays the count of questionnaires mailed to respondents per stratum.

Table 2-2. Distribution of Questionnaires Mailed Per Stratum

County	Boats Owned	Population Stratum Size	# of Questionnaires Mailed
Atlantic	1 boat <26'	6,802	183
	1 boat >=26'	544	15
	more than 1 boat	1,287	35
Bergen	1 boat <26'	6,702	181
	1 boat >=26'	984	27
	more than 1 boat	1,514	41
Burlington	1 boat <26'	8,164	220
	1 boat >=26'	908	24
	more than 1 boat	1,577	43
Camden	1 boat <26'	6,055	163
	1 boat >=26'	645	17
	more than 1 boat	955	26
Cape May	1 boat <26'	4,032	109
	1 boat >=26'	460	12
	more than 1 boat	939	25
Cumberland	1 boat <26'	2,676	72
	1 boat >=26'	115	3
	more than 1 boat	482	13
Essex	1 boat <26'	2,943	79
	1 boat >=26'	435	12
	more than 1 boat	504	14
Gloucester	1 boat <26'	5,250	142
	1 boat >=26'	432	12
	more than 1 boat	943	25
Hudson	1 boat <26'	1,471	40
	1 boat >=26'	294	8
	more than 1 boat	284	8
Hunterdon	1 boat <26'	3,002	81
	1 boat >=26'	240	6
	more than 1 boat	530	14
Mercer	1 boat <26'	2,636	71
	1 boat >=26'	281	8
	more than 1 boat	504	14
Middlesex	1 boat <26'	6,830	184
	1 boat >=26'	838	23
	more than 1 boat	1,134	31
Monmouth	1 boat <26'	10,623	286
	1 boat >=26'	2,003	54
	more than 1 boat	2,225	60
Morris	1 boat <26'	7,785	209
	1 boat >=26'	709	19
	more than 1 boat	1,411	38
Ocean	1 boat <26'	15,724	424
	1 boat >=26'	2,471	67
	more than 1 boat	4,310	116

Table 2-2. Distribution of Questionnaires Mailed Per Stratum (Cont'd)

County	Boats Owned	Population Stratum Size	# of Questionnaires Mailed
Passaic	1 boat <26'	4,564	123
	1 boat >=26'	350	9
	more than 1 boat	616	17
Salem	1 boat <26'	2,385	64
	1 boat >=26'	128	3
	more than 1 boat	481	13
Somerset	1 boat <26'	3,825	103
	1 boat >=26'	551	15
	more than 1 boat	688	19
Sussex	1 boat <26'	5,700	154
	1 boat >=26'	158	4
	more than 1 boat	946	26
Union	1 boat <26'	3,335	90
	1 boat >=26'	433	12
	more than 1 boat	598	16
Warren	1 boat <26'	2,493	67
	1 boat >=26'	83	2
	more than 1 boat	333	9

2.2 Weighting and Estimation

2.2.1 Sampling Weights

An estimate is an indication of the value of an unknown quantity based upon observed data. In survey work, once a sample has been selected and the responses are obtained from the sampling units, the sample must be related back to the population of interest. Since the responses have only been observed on sampling units and not on every unit in the study population, population quantities of interest must be estimated using the responses from the sample. This estimation is carried out with the use of sampling weights. For this survey, the sampling weight represented by w for each respondent in a stratum (e.g., Boaters from Ocean county with 1 boat ≥ 26 feet) is $w=N/n$ where N is the count of all boaters in that stratum and n is the size of boaters that were randomly selected for the survey and responded. The weight can be thought of as the number of registered boaters in the stratum's population represented by the respondent. For example, for boaters in Ocean County owning one boat greater or equal to 26 feet, 20 people responded from a known population of 2,471 registered boaters. Thus, each of these 20 persons has a sampling weight of $2,471/20=123.6$, indicating that each respondent represents 124 other boaters in that stratum or sub-population. Since each respondent within a stratum represents a certain number of boaters in the stratum's population, the whole sample over all the strata represents the total population of New Jersey registered boaters, and accordingly, the sum of the sampling weights from all observations equals the study population size of 148,820. The sampling weights were recalculated prior to the analysis of each individual question since the number of respondents who provided answers varied across the questions.

2.2.2 Estimation in Domains

In many surveys, estimates are desired not only for the population as a whole but also for subpopulations, called domains. In this survey, we may wish to compute estimates for each class of most frequently used boat and thus the domain estimation is required, where the domains are defined by the boat classes of most frequently used boats. Because it is not known what type of boat is used most frequently until boaters are sampled, the

number of respondents who fall into each boat class or domain is a random variable whose value is unknown at the time the survey is designed. Since the sample sizes for the domains are random variables, this variability must be incorporated in the variance estimation. Using domain estimation, totals, averages and proportions of interest were estimated for each boat class of most frequently used boat.

2.2.3 Estimating Totals

Estimates of population totals were generated from survey questions that queried the respondent about the characteristics of boats they own, the boating trips they took, and their boating related expenditures. For example, using survey responses to the question *“How many boat trips did you take in New Jersey in 2006?”* the total number of boat trips taken by *all* registered New Jersey boaters was estimated. Estimates of total boater characteristics or behavioral patterns, were computed using weighted survey responses over all boaters from all counties and boat categories. Under a stratified sampling design, the sub-group or stratum total is estimated by the weighted sum of the observations in that stratum. These stratum totals are then summed across all strata to estimate the boater population total. Similarly, the variance of the population total is the sum of the variances of the population stratum totals. Please see Appendix B for scientific notation related to the estimation of totals and their associated standard errors.

The estimates for totals and their associated variances for boat classes of most frequently used boats (powerboat <26', powerboat ≥26', sailboat <26', sailboat ≥26', jetski/waverunner, rowboat/canoe/kayak) were derived using domain estimation techniques. See Appendix B for detailed formulae used to compute the population and domain total estimates and their associated variances.

2.2.4 Estimating Averages

Estimates of population averages were generated from survey questions that queried the respondent about the number and type of boats they own, the frequency of their boating trips, and the nature of their boating related expenditures. For example, by using survey responses to the question “*Please estimate your annual boat related expenses in New Jersey during 2006 for the boat you use most frequently.*”, the average amount annually spent on taxes and registration fees by a registered boater in New Jersey was estimated. Boater population average estimates were computed using weighted survey responses over all strata. Under a stratified sampling design, the population stratum average is estimated by the weighted average of the observations in that stratum. The overall population average is then obtained by taking a weighted average of the sample stratum averages. The variance of the population average is the sum of the variances of the population stratum totals, divided by the population size squared. Please see Appendix B for scientific notation related to the estimation of averages and their associated standard errors.

The estimates for population averages and their associated variances were estimated for each boat class of most frequently used boat using domain estimation techniques. See Appendix D for detailed formulae used to compute the population and domain estimates and their associated variances.

2.2.5 Estimating Percentages

For categorical survey questions such as “*Where do you keep the boat you use most frequently during the boating season?*” respondents had to select their response from a list of categories. For these questions, it was of interest to estimate the percentage of the population in each response category. Survey estimates for the percentage of the target population in a given level of a question were generated for each boat class of most frequently used boat where applicable as well as the overall population.

For each level of a categorical question, an indicator variable was created. If the respondent selected that level as their response, the indicator variable for that level was given a value of 1, while a value of 0 was assigned to all other indicator variables representing the levels of the question not chosen by the respondent. To estimate the percentage of the population in a given level of a question, the mean of the indicator variable for that level is estimated, since a percentage can be represented by the mean of an indicator variable. Therefore, the estimation methodology outlined in section 2.2.4 *Estimating Averages*, is applied to the indicator variables to obtain the population proportion estimates of interest and their associated variance estimates.

For example, to estimate the percentage of males in a population based on a sample of 100, each respondent would be assigned an indicator value of 1 if they are male and 0 if they are female. Assume there were 55 male respondents. Then there are 55 indicators with a value of 1, and 45 with a value of 0. To estimate the percentage of males, we simply use the sample mean of the indicator variable, which is $55/100=0.55$.

2.3 IMPUTATION OF ERRONEOUS OR MISSING VALUES

In survey sampling, it is often the case that a sampling unit does not respond to every item on a questionnaire, which results in what is termed item non-response. Questions of a sensitive nature, such as those asking about income, marital status, beliefs and opinions are often prone to non-response because the respondent refuses to answer. Conversely, the respondent might simply not know the answer to a question. Regardless of the nature of the non-response, a set of rules of how to deal with item non-response must be crafted. It is important to apply appropriate imputation rules in order to obtain valid inferences. These rules are often created to utilize the maximum number of responses in the estimation stage of the analysis. For this analysis, imputation rules were created on a per question basis and can be found in Table 2-3 below.

For questions not included in Table 2-3, no imputation rules were implemented. Rather, if a question had missing responses, these records were not used in the survey estimation for that question.

Table 2-3. Imputation Rules Per Question

Question #	Question	Imputation Methodology
1	Please indicate the percent of your 2006 boat trips that were made in the following states.	If a boater's responses in each category added to 100, then any missing values was set to zero. If a respondent's percentages did not add to 100, then all of their responses were set to missing and were not used in the survey estimation for this question.
4	Please indicate the number and type of boats registered in your name in New Jersey during 2006.	If the respondent failed to put in the number of boats they have in any of the boat classes in question 4, then their responses to question 5 were investigated to see if they put in a value for percentage of use for that boat class. If they responded with a percentage for a given boat class in question 4 but did not indicate how many boats in that class they own, it was assumed they owned one boat in that class. If a response was missing for any of the 6 boat classes, it was set to zero.
5	Please indicate what percentage of trips you took in New Jersey during 2006 on each boat type.	If a boater's responses in each category added to 100, then any missing values were set to zero. If a respondent's percentages did not add to 100, then all of their responses were set to missing and were not used in the survey estimation for this question.
12	Please provide the location of where this boat is kept during the boating season.	If the county field was missing, the county of primary residence was used.
17	Please indicate the percentage of trips that were made in the following types of waterbodies with the boat you used most frequently in 2006.	If a boater's responses in each category added to 100, then any missing values was set to zero. If a respondent's percentages did not add to 100, then all of their responses were set to missing and were not used in the survey estimation for this question.
18	What was the primary purpose of your 2006 boat outings?	If a boater's responses in each category added to 100, then any missing values was set to zero. If a respondent's percentages did not add to 100, then all of their responses were set to missing and were not used in the survey estimation for this question.
21	What 3 New Jersey Destination Areas did you travel to most frequently in 2006? (Please provide the waterbody name, county and number of trips made in 2006).	If the respondent answered the same number of trips for more than one county, the county mentioned first by the respondent was used as the most frequently visited county. If all county fields were missing, the county from question 12 was used to represent New Jersey trip destination.
22	Please estimate your expenses on a single TYPICAL OUTING during 2006 in New Jersey for the boat you use most frequently. (Please do not include any annual expenditures in this section).	<p>If there were responses in some categories but not others, missing responses were set to zero. If responses were missing in all categories, then this respondent was not used in the survey estimation for this question.</p> <p>For respondent ID 757, their response for Boat Fuel-Gas was set to \$20 since the recorded value of \$20,000 was an outlier.</p>

Table 2-3. Imputation Rules Per Question (Cont'd)

Question #	Question	Imputation Methodology
23	Please estimate your ANNUAL Boat Related Expenses in New Jersey during 2006 for the boat that you use most frequently. (Please include expenditures that you actually made in 2006).	<p>If there were responses in some categories but not others, missing responses were set to zero. If responses were missing in all categories, then this respondent was not used in the survey estimation for this question. As a validation check, if question 23's "purchase of boat" was not missing (indicating the respondent purchased their MFUB boat in 2006), and their response to question 9 was not "Yes" (indicating they did not purchase their MFUB in New Jersey in 2006), then their response to question 23's "purchase of boat" was set to missing.</p> <p>For respondent ID 309, their response for Boat Club/Association Dues was set to \$55 since the recorded response of \$550,100 was an outlier.</p> <p>For respondent ID 1056, their response for Water Skiing Equipment was set to \$57, since the recorded value of \$57,000 was an outlier.</p>
27	What is the number of persons in your household (including yourself) with the following age ranges.	If a response was missing in any of the 8 age categories, it was set to be zero. The total number of people in the household was obtained by summing a respondent's answers to question 27. If the total number of people in the household was found to be zero, then the total number of people in the household was set to 1 and it was assumed that this person is 51-60 years old. This age category was used as the assumed one since it had the highest proportion of respondents in it.
Boat Category		Respondent ID's 712 and 133 were assigned to $\geq 26'$ based on investigation of boat model and make supplied in question 8.
Boat Class (Most Frequently Used Boat)		If a boat class could not be assigned based on a boater's responses to questions 4 and 5, the make and model of their most frequently used boat (as indicated by their response to question 8) was searched in the Motor Vehicle Database and the reported specifications of the boat were used to assign the boat class. Respondent ID's 356 and 133 were assigned to Powerboat $\geq 26'$, 218 and 190 were assigned to Powerboat $< 26'$, 712 was assigned to Sailboat $\geq 26'$, and 212 was assigned to Sailboat $< 26'$.
Number of Trips per Boat Class		If a boater's responses in each category of question 5 added to 100 and their response to question 6 was non-missing, then the number of trips per boat class was calculated by multiplying their responses to question 5 by the total number of boat trips they took in New Jersey in 2006, as indicated in question 6. If a respondent's percentages did not add to 100, then the number of trips per boat class was set to missing and was not used in the survey estimation for this question.

Corrections were made to several responses that were found to have incorrect values. Table 2-4 below displays both the recorded response and its correction for all questions with anomalies.

Table 2-4. Data Capture Edits

Question #	Field	Captured Response	Corrected Response
13	Off Season Boat Location	30	set to missing
14	Method to Access Waters	51	set to missing
		s	
		Marina/Launch	
16	Vehicle Type to Access Waters	50	set to missing
		ss	
21	County Name	Atlantic/Cap	Atlantic
		Atlantic/Oce	
		Atlantic/Cape	
		Bergen/Hudso	Bergen
		Bergen/Huds	
		Burlington/C	Burlington
		Cape May/Atl	Cape May
		Cape May/Atla	
		Cape May/Oce	
		Cumberland/	Cumberland
		Cumberland/Sa	
		Lebenon	Lebanon
		Middlesex	Middlesex
		Monmouth/Oce	Monmouth
		Monmouth to L	
		Monmouth/Ocea	
		Morris/Susse	Morris
		Ocean/Atlant	Ocean
		Ocean/Cape M	
		Ocean/Atlanti	
		Ocean/Monout	
		Passaic/Suss	Passaic
		Sussex/Warren	Sussex
24	Age Category	236	set to missing
		356	
		\56	
		m	
		46	46-55
26	Marital Status	2	set to missing
		3	
		f	
		ms	
29	Annual Household Income	\$20,000 or less	20,000 or less
		71	71,000 to 80,000
		Wm Meyer	set to missing

2.3.1 Determining the Boat Category of Each Respondent

Each respondent was assigned to a boat category based on the number and length of boats they own, as determined from their survey responses. The possible boat categories are: less than 26 feet, greater than or equal to 26 feet, and multiple boats. If they indicated they had two or more boats in question 2, *“How many boats do you currently have registered in New Jersey?”* they were assigned to the boat category “Multiple Boats”. If they responded that they had one boat in question 2, and in question 4 they responded that it was either a powerboat less than 26 feet, a sailboat less than 26 feet or a personal water craft/rowboat/canoe/kayak, then they were assigned to the boat category “Less Than 26 Feet”. If they responded that they had one boat in question 2, and in question 4 they responded that it was either a powerboat greater than 26 feet or a sailboat greater than 26 feet, they were assigned to the boat category “Greater Than 26 Feet”.

If a respondent failed to indicate the number of boats they own in both question 2 and question 4, their response to question 5 (*“Please indicate what percentage of trips you took in New Jersey during 2006 on each boat type.”*) was used to assign their boat category. If they put in a percentage for a given boat type but didn’t indicate how many of those boats they own, it was assumed that they owned 1 boat of that type. The rules given above were then used to assign them to a boat category.

After all checks and edits were applied, all 1,078 respondents were classified into one of the three possible categories as displayed in table 2-5.

Table 2-5. Sample distribution of boaters by boat category

Boat Category	Frequency	Percent
Less than 26 feet in length	622	58%
26 feet or greater in length	101	9%
More then one boat	355	33%
Total	1,078	100%

2.3.3 Determining the Most Frequently Used Boat of Each Respondent

For respondents with more than one registered boat, the class of their most frequently used boat was determined using their response to question 5. The following boat classes, defined by the type and length of craft, were used: powerboat less than 26', powerboat equal or greater than 26', sailboat less than 26', sailboat equal or greater than 26', jetski/waverunner, rowboat/canoe/kayak. Their most frequently used boat was assigned to be the one which they had taken the greatest percentage of their trips in New Jersey in 2006. If there were ties in their responses in question 5 (meaning they had taken the same percentage of trips on more than one of their boats), then the following order of preference was used to assign their most frequently used boat: powerboat less than 26', powerboat equal or greater than 26', sailboat less than 26', sailboat equal or greater than 26', jetski/waverunner, rowboat/canoe/kayak. If the boater did not respond to question 5, then their most frequently used boat was determined to be the class in which they owned the greatest number of boats, as indicated by their response to question 4.

Each respondent was assigned to a boat class (powerboat less than 26', powerboat equal or greater than 26', sailboat less than 26', sailboat equal or greater than 26', jetski/waverunner, rowboat/canoe/kayak) based on the type of their most frequently used boat. If boat class could not be assigned based on a boater's responses to questions 4 and 5, the make and model of their most frequently used boat (as reported in their response to question 8) was used. A search on the Internet was done to find the boat's type and length in order to place the boater into the correct boat class category. It was necessary to assign each boater to one of the six classes of most frequently used boat so that spending characteristics captured in questions 22 and 23 could be confidently estimated within each class of boat. If a boater could not be assigned to a most frequently used boat category, then his or her responses for questions 22 and 23 could not contribute to the boat class total and average estimates.

After all checks and edits were applied, all 1,078 respondents were classified into one of the six possible categories as displayed in table 2-6.

Table 2-6. Sample distribution of boaters by Most Frequently Used Boat

Most Frequently Used Boat	Frequency	Percent
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Powerboat less than 26 feet in length	782	73%
Powerboat 26 feet or greater in length	134	12%
Jetski/Waverunner/PWC	51	5%
Rowboat/Canoe/Kayak	50	5%
Sailboat less than 26 feet in length	35	3%
Sailboat 26 feet or greater in length	26	2%
Total	1,078	100%

2.3.4 Determining the Distribution of Trip Destinations by County

The population distribution of trip destinations by county was determined using survey responses to question 21 (*“What 3 New Jersey Destination Areas did you travel to most frequently in 2006? Please provide the waterbody name, county and number of trips made in 2006.”*). From responses, the names of the counties visited and the number of visits to each county were determined for each boater. The total number of trips to each county in 2006 was found by summing the number of trips to that county over all respondents who reported that county as one of their top 3 destination areas in 2006. Sampling weights were applied to the sums to estimate the total number of trips made to each county from the population of boaters (see section 2.3.1 below for a description of sampling weights). Results based on the pattern of responses in the survey are provided in table 2-7. Standard errors are not available for total trips per county as this value is obtained by combining three different data elements into one. Ocean, Monmouth and Atlantic counties are the top three visited counties in New Jersey with 35.3, 15.3 and 10.4 percent of all trips taken respectively. The estimated total number of trips taken over all counties does not equal the estimated total number of trips from question 6 as question 21 only focused on three top locations and not all locations. The population distribution of trips is required to enable the proportionate allocation of total economic impacts across the counties.

Table 2-7: County destinations ranked by frequency of trips

New Jersey Destination County	Frequency of Responses	Total Trips	Percent
Ocean	585	1,445,160	35.20%
Monmouth	240	627,397	15.28%
Atlantic	137	424,806	10.35%
Cape May	183	367,174	8.94%
Morris	70	234,575	5.71%
Sussex	57	227,461	5.54%
Passaic	49	166,445	4.05%
Cumberland	69	113,585	2.77%
Middlesex	35	92,253	2.25%
Hunterdon	59	81,814	1.99%
Burlington	41	76,215	1.86%
Salem	34	52,273	1.27%
Mercer	24	37,460	0.91%
Camden	10	35,094	0.85%
Bergen	13	27,161	0.66%
Gloucester	15	24,389	0.59%
Warren	22	14,341	0.35%
Howell	1	12,095	0.29%
Lebanon	2	7,229	0.18%
Hudson	8	6,999	0.17%
Union	2	5,306	0.13%
New York	1	5,028	0.12%
Somerset	3	4,497	0.11%
Richmond	1	2,470	0.06%
Clinton	2	2,416	0.06%
Delaware	2	2,271	0.06%
Brunswick Co	1	2,117	0.05%
Federal Wate	1	1,413	0.03%
Westchester	1	1,350	0.03%
Bucks	1	1,014	0.02%
Orange	1	797	0.02%
Port Republi	1	796	0.02%
South Jersey	1	588	0.01%
Various	1	280	0.01%
NY	1	254	0.01%
Wildwood	1	168	0.00%
NYC	1	162	0.00%
Manhattan	1	159	0.00%

APPENDIX A: DISTRIBUTION OF RETURNED QUESTIONNAIRES

County	Boats Owned	Population Stratum Size	# of Questionnaires Mailed	# of Questionnaires Returned
Atlantic	1 boat <26'	6,802	183	25
	1 boat >=26'	544	15	4
	more than 1 boat	1,287	35	15
Bergen	1 boat <26'	6,702	181	34
	1 boat >=26'	984	27	6
	more than 1 boat	1,514	41	19
Burlington	1 boat <26'	8,164	220	32
	1 boat >=26'	908	24	11
	more than 1 boat	1,577	43	23
Camden	1 boat <26'	6,055	163	34
	1 boat >=26'	645	17	3
	more than 1 boat	955	26	15
Cape May	1 boat <26'	4,032	109	35
	1 boat >=26'	460	12	5
	more than 1 boat	939	25	16
Cumberland	1 boat <26'	2,676	72	15
	1 boat >=26'	115	3	0
	more than 1 boat	482	13	16
Essex	1 boat <26'	2,943	79	14
	1 boat >=26'	435	12	1
	more than 1 boat	504	14	10
Gloucester	1 boat <26'	5,250	142	32
	1 boat >=26'	432	12	2
	more than 1 boat	943	25	15
Hudson	1 boat <26'	1,471	40	7
	1 boat >=26'	294	8	2
	more than 1 boat	284	8	2
Hunterdon	1 boat <26'	3,002	81	24
	1 boat >=26'	240	6	2
	more than 1 boat	530	14	9

County	Boats Owned	Population Stratum Size	# of Questionnaires Mailed	# of Questionnaires Returned
Mercer	1 boat <26'	2,636	71	22
	1 boat >=26'	281	8	3
	more than 1 boat	504	14	6
Middlesex	1 boat <26'	6,830	184	48
	1 boat >=26'	838	23	7
	more than 1 boat	1,134	31	13
Monmouth	1 boat <26'	10,623	286	51
	1 boat >=26'	2,003	54	11
	more than 1 boat	2,225	60	24
Morris	1 boat <26'	7,785	209	39
	1 boat >=26'	709	19	8
	more than 1 boat	1,411	38	29
Ocean	1 boat <26'	15,724	424	123
	1 boat >=26'	2,471	67	20
	more than 1 boat	4,310	116	56
Passaic	1 boat <26'	4,564	123	26
	1 boat >=26'	350	9	2
	more than 1 boat	616	17	11
Salem	1 boat <26'	2,385	64	10
	1 boat >=26'	128	3	1
	more than 1 boat	481	13	9
Somerset	1 boat <26'	3,825	103	23
	1 boat >=26'	551	15	2
	more than 1 boat	688	19	5
Sussex	1 boat <26'	5,700	154	31
	1 boat >=26'	158	4	1
	more than 1 boat	946	26	12

County	Boats Owned	Population Stratum Size	# of Questionnaires Mailed	# of Questionnaires Returned
Union	1 boat <26'	3,335	90	26
	1 boat >=26'	433	12	5
	more than 1 boat	598	16	10
Warren	1 boat <26'	2,493	67	12
	1 boat >=26'	83	2	0
	more than 1 boat	333	9	4

APPENDIX B ESTIMATION AND VARIANCE SPECIFICATIONS

B.1 Estimating a Population Parameter Under a Stratified Design

The following formulae were used to generate the survey estimates and their associated variance estimates for the entire population.

B.1.1 Estimating a Population Mean

Let y_{hi} represent the response of unit i from stratum h for a given question. Then the estimated mean of y in the overall population is

$\bar{y}_{str} = \sum_{h=1}^H \frac{N_h}{N} \bar{y}_h$, where $\bar{y}_h = \left(\sum_{i=1}^{n_h} y_{hi} \right) / n_h$ is the population stratum mean estimated by the weighted average of the observations in stratum h .

The variance of \bar{y}_{str} is estimated by

$\hat{V}(\bar{y}_{str}) = \sum_{h=1}^H \left(1 - \frac{n_h}{N} \right) \left(\frac{N_h}{N} \right)^2 \frac{s_h^2}{n_h}$, where $s_h^2 = \sum_{i=1}^{n_h} \frac{(y_{hi} - \bar{y}_h)^2}{n_h - 1}$ is the sample variance within stratum h .

$$SE(\bar{y}_{str}) = \sqrt{\hat{V}(\bar{y}_{str})}$$

B.1.2 Estimating a Population Total

Let y_{hi} represent the response of unit i from stratum h for a given question. Then the estimated total of y in the overall population is

$\hat{t}_{str} = \sum_{h=1}^H \hat{t}_h$, where $\hat{t}_h = (N_h / n_h) \sum_{i=1}^{n_h} y_{hi}$ is the population stratum total estimated by the weighted sum of the observations in stratum h .

The variance of \hat{t}_{str} is estimated by

$\hat{V}(\hat{t}_{str}) = \sum_{h=1}^H \left(1 - \frac{n_h}{N} \right) N_h^2 \frac{s_h^2}{n_h}$, where $s_h^2 = \sum_{i=1}^{n_h} \frac{(y_{hi} - \bar{y}_h)^2}{n_h - 1}$ is the sample variance within stratum h .

$$SE(\hat{t}_{str}) = \sqrt{\hat{V}(\hat{t}_{str})}$$

B.2 Domain Estimation

The following formulae were used to generate the survey estimates and their associated variance estimates for each boat class (domain).

For a domain D , let I_D be the corresponding indicator variable:

$$I_D(h,i) = \begin{cases} 1 & \text{if observation } (h,i) \text{ belongs to } D \\ 0 & \text{otherwise} \end{cases}$$

$$\text{Let } z_{hi} = y_{hi} I_D(h,i) = \begin{cases} y_{hi} & \text{if observation } (h,i) \text{ belongs to } D \\ 0 & \text{otherwise} \end{cases}$$

Then the statistics for variable y in domain D are computed based on the values of z .

B.2.1 Estimating a Domain Mean

The estimated mean of y in the domain D is

$$\hat{Y}_D = \left(\sum_{h=1}^H \sum_{i=1}^{n_h} v_{hi} z_{hi} \right) / v_{..}$$

$$\text{where } v_{hi} = w_{hi} I_D(h,i) = \begin{cases} w_{hi} & \text{if observation } (h,i) \text{ belongs to } D \\ 0 & \text{otherwise} \end{cases}$$

$$v_{..} = \sum_{h=1}^H \sum_{i=1}^{n_h} v_{hi}$$

The variance of \hat{Y}_D is estimated by

$$\hat{V}(\hat{Y}_D) = \sum_{h=1}^H \hat{V}_h(\hat{Y}_D)$$

$$\text{where } \hat{V}_h(\hat{Y}_D) = \frac{n_h(1-f_h)}{n_h-1} \sum_{i=1}^{n_h} (r_{hi} - \bar{r}_{h\cdot})^2$$

$$r_{hi} = v_{hi} (z_{hi} - \hat{Y}_D) / v_{..}$$

$$\bar{r}_{h\cdot} = \left(\sum_{i=1}^{n_h} r_{hi} \right) / n_h$$

$$SE(\hat{Y}_D) = \sqrt{\hat{V}(\hat{Y}_D)}$$

B.2.2 Estimating a Domain Total

The estimated total of y in the domain D is

$$\hat{Y}_D = \sum_{h=1}^H \sum_{i=1}^{n_h} v_{hi} z_{hi}$$

The variance of \hat{Y}_D is estimated by

$$\hat{V}(\hat{Y}_D) = \sum_{h=1}^H \hat{V}_h(\hat{Y}_D)$$

$$\text{where } \hat{V}_h(\hat{Y}_D) = \frac{n_h(1-f_h)}{n_h} \sum_{i=1}^{n_h} (z_{hi} - \bar{z}_{h\cdot})^2$$

$$z_{hi} = v_{hi} z_{hi}$$

$$\bar{z}_{h\cdot} = \left(\sum_{i=1}^{n_h} z_{hi} \right) / n_h$$

$$SE(\hat{Y}_D) = \sqrt{\hat{V}(\hat{Y}_D)}$$

APPENDIX C GLOSSARY OF TERMS

Confidence Interval: A confidence interval is used to express precision of estimates in a meaningful way. Generally, survey results with a narrow interval are more reliable than results with larger intervals. A 95% confidence interval for an estimate such as the population average indicates that if sampling were repeated indefinitely, each sample leading to a new confidence interval, then for every 19 out of 20 samples, the interval will cover the true population average value.

Estimate: In general, an estimate is an indication of the value of an unknown quantity based on observed data. In survey work, once a sample has been selected and the responses are obtained from the sampling units, the sample must be related back to the population of interest. Since the responses have only been observed on sampling units and not on every unit in the population, population quantities of interest must be estimated using the responses from the sample. This is carried out with the use of sampling weights.

Sampling Unit: A sampling unit is the unit that is actually sampled. The population is divided into non-overlapping units called sampling units such that each member of the population belongs to only one sampling unit. Sampling units may or may not correspond to the units of analysis. For example, in a household survey, the units selected may be dwellings, while the units of analysis would be people or families.

Sampling Weight: The sampling weight indicates the number of units in the population that are represented by a unit in the sample. The sampling weight for a given unit is the inverse of the probability of selection of the unit in the sample.

Standard Error: The standard error of an estimate is defined as the square root of the variance of the estimate and is often the preferred choice of error statistics since it is reported in the same units of measurement as the estimate itself.

Stratified Survey Design: A stratified sampling design utilizes relevant information available on members of the population to increase the precision of survey estimates. If the variable of interest is thought to take on different mean values in different subpopulations, more precise estimates of populations quantities may be obtained by taking a stratified random sample. The population is divided into non-overlapping subpopulations, called strata. The strata constitute the whole population such that each sampling unit belongs to only one stratum. An independent sample is drawn from each stratum and information is pooled to obtain overall population estimates.

Study Population: The study population is the population about which information is desired. It is the collection of units to which the survey results apply.

Variance (of an estimate): every estimate obtained from a sample has an error associated with it. This error is, in part, due to the fact that if a different sample of the same size and design was selected from the same population, it would produce different survey estimates than the sample originally selected. This sampling error contributes to

what is called the variance of the estimate, which is a measure of the variability in the estimate obtained from repeated samples.

APPENDIX C

ECONOMIC IMPACT ANALYSIS



1. ECONOMIC IMPACT ANALYSIS

This chapter is organized in two sections. Section **Error! Reference source not found.** provides an overview of key concepts in economic impact analysis. Key terminology is defined and explained in non-technical language. Section 1.2 provides a brief description of the IMPLAN® economic impact modeling system, the methodological tool of the analysis. Section 1.3 presents the results of the economic impact analysis of recreational boating expenditures in New Jersey. Finally Section 1.4 provides a brief comparison of results with a similar study.

1.1 Key Concepts in Economic Impact Analysis

Economic impact analysis is the study of the effect of a change in the demand for goods and services on the level of economic activity in a given area, as measured by business output (sales), value added (gross regional product), labor income (earnings), employment (jobs), and tax revenue. This change in demand can be the result of decisions made by the government, firms, or households, for example a new investment project, or an increase in the number of tourists coming to the area.¹ Frequently, various stakeholders are interested in the economic impact (or the contribution to the local economy) of certain local industrial sectors, or activities in which people engage such as recreational boating.

Traditionally, economic impact analysis involves the estimation of three distinct types of expenditure/production activity, commonly referred to as “direct effects,” “indirect effects,” and “induced effects.” The total economic impact is the sum of these direct, indirect and induced effects for the project being evaluated.

Direct impacts refer to those financial transactions (output, earnings, and employment) occurring as the result of direct spending by economic agents. Direct spending results in the employment of workers, sales of locally produced goods and services, and generation of local tax revenue. The direct effects of boaters’ spending in New Jersey were calculated based on the survey data. More specifically, answers to question 22 (trip related expenditures) and question 23 (non-trip related expenditures) were utilized.

Indirect economic impacts refer to the “spin-off” economic activities that result from purchases of production inputs, goods and services, by those businesses that are directly impacted by boating related expenditures. The spending by these supplier firms for labor, goods and services necessary for the production of their product or service creates output of other firms further down the production chain, thus bringing about additional employment, income and tax revenue.

Induced impacts represent the increase in business output (or employment, earnings, etc.) over and above the direct and indirect impacts, generated by successive rounds of spending (often referred to as re-spending) of employment income. Induced impacts are thus changes in output (or employment, earnings, etc.) that are the result of personal (household) spending for goods and services – including employees of direct supplier firms (direct impact) and employees of all

¹ This section draws heavily from the following paper: Weisbrod, G. and B. Weisbrod. 1997. Measuring the economic impact of projects and programs. Economic Development Research Group. Boston, MA.

other firms comprising the indirect impact. As with business purchasing, personal consumption creates additional economic output, leading to still more employment, income and tax flows.

Indirect and induced business impacts are often referred to as “multiplier effects,” since they can make the overall economic impacts substantially larger than the original expenditure that initiated all subsequent rounds of spending described above. In reality, while indirect and induced impacts do always occur, the net impact of an economic “shock” such as additional economic activity or sales in an industry, on the total level of economic activity in an area may or may not be increased by multiplier effects. That outcome depends on the geographic definition of the study area, its ability to provide additional workers and capital resources, or industrial structure and the extent to which it can manufacture various goods and services that are needed throughout the supplier-production chain.

In small geographic areas, such as a municipality or a county, the overall effect is smaller than in larger geographic areas such as state or region (that comprises a few states) because of “leakages”. “Leakages” are referred to as the amounts of money that households spend outside of the area as well as the amounts of money that retailers and service providers have to spend to bring to the area the goods that were purchased with the original expenditures or amounts of money that are used to purchase production inputs outside of the area. The amounts of money that do not stay in the local economy do not generate multiplier effects and do not generate economic impacts. Leakages have thus to be accounted for appropriately so as to not overstate the extent of economic impact.

Multipliers typically are expressed in terms of output or jobs. An output multiplier is the total overall increase in dollars of business output (sales) for all industries per dollar of additional final demand (purchases) of a given industry in the area. A job multiplier is the total overall increase in jobs for all industries per new job created in a given industry. The higher the multiplier, the greater is the total economic response to the initial direct effect.

1.2 Methodology

To measure the direct, indirect and induced effects of recreational boating expenditures in New Jersey, we used the IMPLAN® model, which is an input-output² based economic impact assessment model originally developed by the U.S. Forest Service – and now maintained by the Minnesota IMPLAN Group, Inc.³ The model internal data files include transaction information (intra-regional and import/export) for more than 500 different industrial sectors (corresponding to four and five digit North American Industry Classification System , or 1997 NAICS codes)⁴, and data on 21 different economic variables – including employment, output, and employee compensation. The model was populated with the most recent (2004) data available for the state of New Jersey at the time of conducting this analysis.

² An input-output (“I-O”) approach was followed in this study, drawing on an extensive body of research and experience with successful applications to transportation project analysis. An I-O model calculates impact multipliers, which are then used to compute direct, indirect, and induced effects – output, value added, employment, labor income, and tax revenue generated per dollar of direct spending.

³ For further information on the IMPLAN system, go to <http://www.implan.com/>.

⁴ IMPLAN’s (2001) sectoring scheme is based on the Bureau of Economic Analysis’s 1997 benchmark I-O study.

During the analysis, several adjustments were made to help ensure that all impact estimates are truly incremental and specific to the study area:

1. Since the original IMPLAN input data numbers were expressed in 2004 dollars, they were adjusted for inflation to express the results in 2007 dollars.⁵
2. Type SAM multipliers,⁶ used for estimating indirect and induced effects, were modified with regional purchase coefficients (RPCs)⁷ to ensure that imports were not counted.
3. Households were the only institutions considered when building type SAM multipliers. As a result, induced effects are based on New Jersey residents' income solely.
4. For all retail purchases (IMPLAN sectors 401 through 412) the manufacturers of the goods were assumed not to be local.⁸ In other words, all goods were assumed to be imported in New Jersey and the money retailers had to spend to get the goods is lost to the overall impact (leakage).

To use IMPLAN, the user has to allocate the amount of expenditures that represents the change in demand or activities being assessed to certain (one or more) IMPLAN industrial sectors.

Therefore, each expenditure category from the survey (questions 22 and 23) was matched with an IMPLAN sector. It should be noted that some expenditure categories match fairly well with an IMPLAN sector, for example expenditures on fuel or restaurant meals. Other expenditure categories match not as well because certain IMPLAN industrial sectors include a wide range of business activities and NAICS codes. We used the knowledge (or assumptions) as to where and in what circumstances various expenditures are made in order to allocate them as closely as possible to an IMPLAN industrial sector. A complete list of expenditure categories and their corresponding IMPLAN sectors is provided in Table 1.

⁵ Deflators derived from the most current Bureau of Labor Statistics (BLS) Growth Model were used to convert the cash flows from 2002 to 2005 estimates. These deflators are applied at the commodity level and vary by different goods and services.

⁶ Type SAM (Social Accounting Matrix) multipliers are the direct, indirect and induced effects where the induced effect is based on social accounting matrix information. Type SAM multipliers capture inter-institutional transfers (in addition to all commodity flows).

⁷ RPCs represent the portion of the total regional demand that is met by regional production and attempt to account for cross-hauling – the regional importation and exportation of commodities from the same sector; all remaining demand is satisfied by imports, which provide no direct economic benefit to the region. In other words, they filter-out economic leakages from the region.

⁸ The manufacturing sector only contributes 7 percent to total employment in New Jersey.

Table 1: Expenditure Categories and their Corresponding IMPLAN Sectors

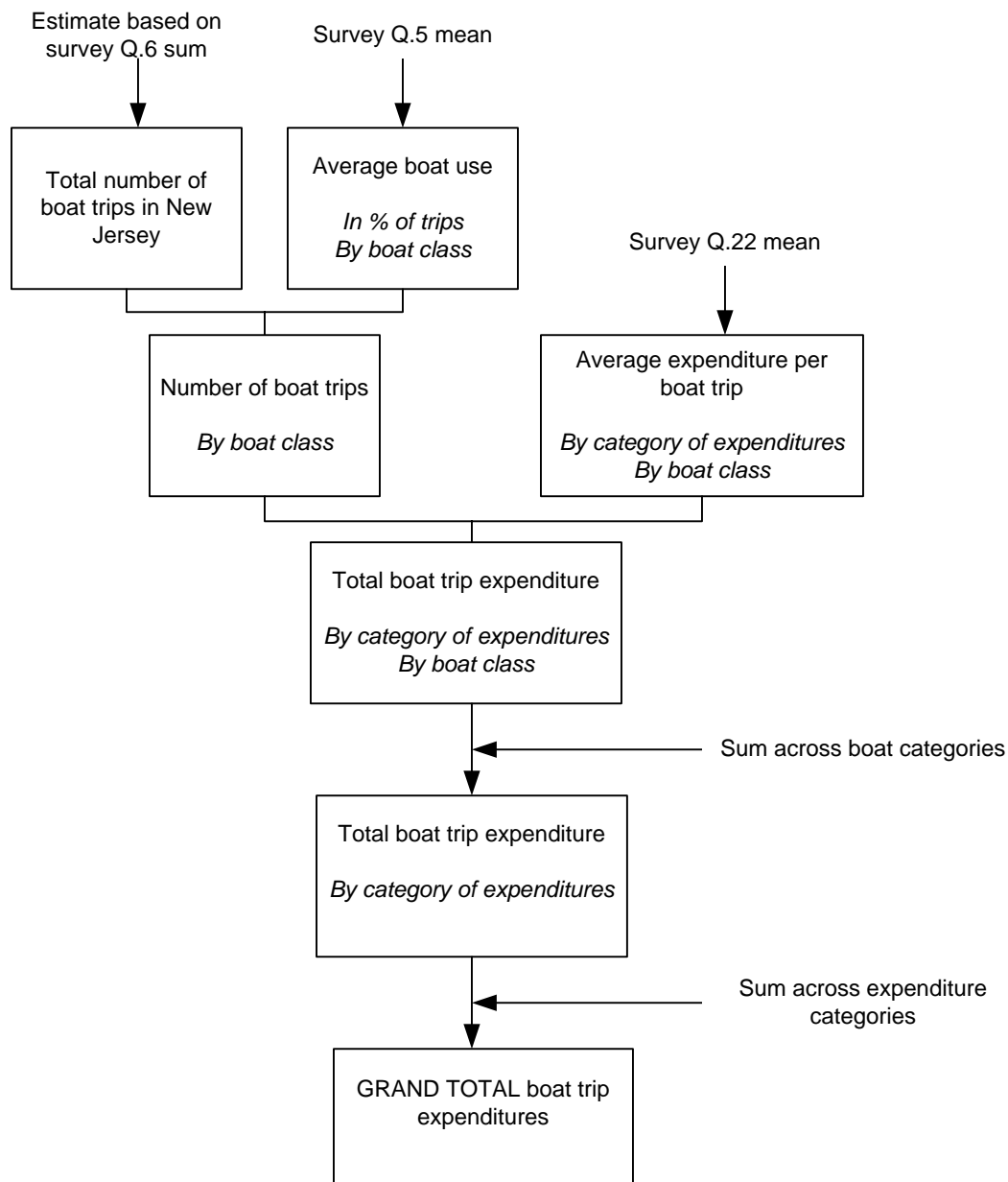
EXPENDITURE CATEGORY	IMPLAN SECTOR
Trip Related Expenditures	
Fuel for transportation to launch site (car or truck)	407 Gasoline stations
Boat fuel	407 Gasoline stations
Boat accessories (ropes, charts, cleaning supplies, etc.)	409 Sporting goods, hobby, book and music stores
Fishing supplies (bait, tackle, etc.)	411 Miscellaneous store retailers
Launch fees	478 Other amusement, gambling, and recreation industries
Temporary docking	478 Other amusement, gambling, and recreation industries
Restaurant meals/drinks	481 Food services and drinking places
Groceries	405 Food and beverage stores
Overnight lodging (including overnight docking at marinas)	479 Hotels and motels, including casino hotels
Shopping/souvenirs	411 Miscellaneous store retailers
Entertainment	478 Other amusement, gambling, and recreation industries
Other	410 General merchandise stores
Non-Trip Related Expenditures	
Seasonal slip/mooring rental	478 Other amusement, gambling, and recreation industries
Winterization and off-season storage	478 Other amusement, gambling, and recreation industries
Put-in/haul-out charges	478 Other amusement, gambling, and recreation industries
Boat and/or towing insurance	428 Insurance agencies, brokerages, and related
Taxes/registration fees	12001 State/local government non-education
Purchase of boat	401 Motor vehicle and parts dealers
Annual boat loan payment (not including above)	425 Non-depository credit intermediation and related activities
Hull repair	484 Electronic equipment repair and maintenance
Bottom paint	404 Building material and garden supply stores
Engine maintenance repair	483 Automotive repair and maintenance, except car washes
Electronic/electrical repair	484 Electronic equipment repair and maintenance
Trailer maintenance/repair	483 Automotive repair and maintenance, except car washes
New and/or replacement electronics	403 Electronics and appliance stores
New and/or replacement sails/rigging	409 Sporting goods, hobby, book and music stores
Boating clothing (e.g., foul weather gear)	409 Sporting goods, hobby, book and music stores
Fishing equipment (rods, reels, nets, lures, etc.)	409 Sporting goods, hobby, book and music stores
Water skiing equipment	409 Sporting goods, hobby, book and music stores
Scuba diving equipment	409 Sporting goods, hobby, book and music stores
Other boating supplies (e.g., paddles, life vests, coolers, etc.)	409 Sporting goods, hobby, book and music stores
Race/Regatta/tournament fees	478 Other amusement, gambling, and recreation industries
Boat club/association dues	478 Other amusement, gambling, and recreation industries
Boater education/instruction (Boat safety, etc.)	493 Civic, social, professional and similar organizations
Boating magazines/publications	414 Periodical publishers
Other	410 General merchandise stores

The next step in the economic impact assessment involved using the survey results to estimate the amount of boating related expenditures (by category of expenditures) that were made by all boaters in New Jersey.

The technical section on survey methodology and analysis outlines the estimation of non-trip related expenditures, or annual expenditures. In non-technical language, this methodology uses survey average expenditures by category of expenditure by county and by boat class together with weights to obtain total amount of expenditures in New Jersey by county and boat class. The weights were developed on the assumption that the responsive boaters represent the entire population of boaters for a given county and boat types. The sum of expenditures across boat types and counties gave the total amount of expenditures by category of expenditures

The total trip related expenditures were developed using the survey average spending per trip by category of expenditures by boat class and in combination with (1) the number of trips made in New Jersey, and (2) the average use pattern of the various boats across the state. The flow chart in Figure 1 below illustrates in a graphical form the adopted methodology.

Figure 1: Estimation of Trip Related Expenditures



1.3 Results

Table 2 below shows the estimated total expenditures made in New Jersey by all New Jersey boaters. The table shows that total boating related expenditures amounted to almost \$2.1 billion. Trip related expenditures exceeded \$1.1 billion, and annual non-trip expenditures amounted to \$938 million.

Table 2: Total Boating Related Expenditures in New Jersey

EXPENDITURE CATEGORY	AMOUNT OF EXPENDITURES IN 2006
<i>Trip Related Expenses in NJ</i>	
Fuel for transportation to launch site	\$103,150,528
Restaurant	\$149,184,942
Boat fuel (diesel)	\$45,054,100
Boat fuel (gasoline)	\$246,090,553
Groceries	\$87,366,100
Boat accessories	\$145,380,583
Overnight lodging	\$40,985,919
Fishing supplies	\$151,792,689
Shopping/Souvenirs	\$38,778,631
Launch fees	\$38,376,499
Entertainment	\$18,769,845
Temporary docking	\$41,843,854
Other	\$23,921,703
Total Trip Related Expenditures	\$1,130,695,946
<i>Non-Trip or Annual Boat Related Expenses in NJ</i>	
Engine maintenance/repair	\$50,715,901
Boater education/instruction	\$2,768,062
Electronic/Electrical repair	\$4,932,008
Boating magazines/publications	\$3,292,548
Trailer maintenance/repair	\$8,186,344
Other	\$7,506,126
Seasonal slip	\$107,501,051
New and/or replacement electronics	\$27,911,866
Winterization and off-season storage	\$57,479,501
New and/or replacement sails/rigging	\$2,629,563
Put-in/Haul-out charges	\$11,967,215
Boating clothing	\$9,005,833
Boat and/or towing insurance	\$43,141,128
Fishing equipment	\$32,120,489
Taxes/Registration fees	\$9,544,315
Water skiing equipment	\$3,164,812
Purchase of boat	\$441,028,956
Scuba diving equipment	\$9,331,104
Annual boat loan payment	\$65,765,971
Other boating supplies	\$13,694,308
Hull repair	\$4,709,623
Race fees	\$3,746,032
Bottom paint	\$10,992,817
Boat club/association dues	\$7,084,145
Total Non-Trip or Annual Boat Related Expenditures	\$938,219,717
Grand Total Boating Related Expenditures in NJ	\$2,068,915,663

The results of the impact assessment are shown in the tables that follow. Table 3 shows the summary of impacts by impact category (output, value added, employment, labour income, and tax revenue.) and type of effect (direct, indirect and induced). Overall, boater spending in New Jersey had an output impact of about \$1.1 billion in direct effects. These direct effects in turn spurred indirect and induced economic activity, thus raising total output to \$1.8 billion. About 62 percent of total output is effectively a value added to the state economy. Boating expenditures also created nearly 18 thousand jobs in New Jersey and generated \$307 million in tax revenue (\$167 million in federal taxes and \$142 million in state/local taxes). Note that total output impact (\$1.8 billion) is less than total boaters' expenditures (\$2.1 billion) because of leakages in sectors of the economy benefiting (directly or indirectly) from boaters' spending.

Table 3: Summary of Impacts

Impact Category	Direct	Indirect	Induced	Total
Output	\$1,066	\$322	\$409	\$1,797
Value Added	\$683	\$188	\$247	\$1,119
Employment	12,744	2,163	3,035	17,942
Taxes				\$307
Federal Taxes				\$167
State/Local Taxes				\$142

Note: All dollar amounts are expressed in millions of 2007 dollars

The results shown in Table 2 and Table 3 can be used to derive aggregate-level multipliers of expenditures, i.e. the expected impacts, output, number of jobs, labour income, and tax revenue per \$1 (or a multiple of it) of boating related expenditures. The results of this calculation are shown in Table 4 below. The table shows that each dollar of boating related expenditures generates \$0.87 in business output, \$0.54 in state gross domestic product (GDP), and \$0.15 in tax revenues in various levels of government. Also, each \$1 million of boating related expenditures generates 8.6 jobs in the state.

Table 4: Aggregate Multipliers of Boating Related Expenditures

TYPE OF IMPACT	DEFINITION	MULTIPLIER
Output	Total business output per \$1 of boating related expenditures	\$0.87
Value added	Total value added per \$1 of boating related expenditures	\$0.54
Employment	Total number of jobs per \$1 million of boating related expenditure)	8.67
Tax revenues	Total tax revenue per \$1 of boating related expenditures	\$0.15

In addition to industries where boating expenditures occur (see Table 1), other sectors of the economy are impacted through the indirect and induced effects. Table 5 lists the top ten industries impacted and shows the combined indirect and induced impacts (output and jobs) associated with boating expenditures. Industries are ranked according to their combined indirect and induced *output* impact. Real estate is the sector that generated the most indirect and induced output (\$52.7 million), followed by wholesale trade (\$39.3 million).

Table 5: Top Ten Industries Impacted

No.	Industry	Total Output	Total Jobs
1	Real estate	\$52,809,108	314
2	Wholesale trade	\$39,371,168	177
3	Management of companies and enterprises	\$29,259,942	109
4	Hospitals	\$23,992,968	196
5	Food services and drinking places	\$175,786,000	3,193
6	Offices of physicians, dentists, and other health practitioners	\$22,217,708	178
7	Legal services	\$13,087,375	97
8	Advertising and related services	\$11,123,738	81
9	Motor vehicle and parts dealers	\$100,253,480	714
10	Accounting and bookkeeping services	\$9,278,496	78

Note: Industries are ranked according to their combined indirect and induced output impact.

The Appendix to this section provides the complete results of the economic impact analysis by category and type of effect aggregated to the 2-digit NAICS industrial code level. In addition, the Appendix shows the approximate distribution of impacts by county for reference as to the regional distribution of impacts within New Jersey.⁹

1.4 Comparison with Similar Studies

Overall, the analysis results are consistent with the findings of a similar study conducted in 2003-2004 for the State of New York.¹⁰ The study determined the economic impact of recreational boating in New York based on a survey of state boat owners and an input-output analysis using the IMPLAN model. Recreational boaters with boats registered in New York spent about \$2.4 billion on goods and services related to boating in the state in 2003. These expenditures in turn had a total economic impact of \$1.8 billion and accounted for 18,700 jobs, thus contributing \$728 million to labor income. A comparison of key results for the New Jersey study and the New York study is provided in Table 6. Boating expenditures and economic impacts statewide have the same magnitude in the two studies.

⁹ It should be emphasized that the breakdown of impacts by county provided in the Appendix is approximate only as the survey was designed to collect the expenditure information at the state level. Therefore, the estimates of total boating related expenditures are accurate from the statistical point of view only at the state level.

¹⁰ Connelly, N. A., T. L. Brown, and D. L. Kay. 2004. Recreational boating expenditures in 2003 in New York State and their economic impacts. New York Sea Grant publication NYSGI-S-04-001. Stony Brook, NY.

Table 6: Comparison with New York Study

	New York (2003 Dollars)	New Jersey (2007 Dollars)
Boating Expenditures	\$2.418 billion	\$2.069 billion
Output Impact	\$1.834 billion	\$1.797 billion
Value Added Impact	\$1.156 billion	\$1.119 billion
Employment Impact	18,702	17,942
Labor Income Impact	\$728 million	\$678 million

APPENDIX: ADDITIONAL RESULTS OF INPUT-OUTPUT ANALYSIS

DETAILED RESULTS BY SECTOR

Table 7 to Table 10 report the complete results of the economic impact analysis by impact category (output, value added, labor income and employment)¹¹ and type of effect (direct, indirect and induced) at the aggregated industry level (2-digit NAICS). All dollar amounts are expressed in 2007 dollars. For each impact category, direct effects represent at least 60 percent of total impact. This is due, in part, to the fact that for all retail purchases the manufacturers of the goods are assumed not to be located in New Jersey.¹² The top three industries benefiting from boating activity are, in order of importance: (i) Retail trade, (ii) Arts, entertainment and recreation, and (iii) Accommodation and Food services. Together they account for more than half of total output impact. Note also that there are no indirect and induced effects for Institutions since this sector does not have any production activity.

Table 7: Output Impact by Aggregated Industry and Type of Impact (2007 Dollars)

Aggregated Industry	Direct	Indirect	Induced	Total
Agriculture, Forestry, Fishing & Hunting	\$1,998	\$944,008	\$851,860	\$1,797,866
Mining	\$213	\$226,467	\$230,753	\$457,433
Utilities	\$77,230	\$13,403,080	\$9,150,121	\$22,630,432
Construction	\$106,086	\$7,202,880	\$2,441,977	\$9,750,943
Manufacturing	\$183,447	\$43,569,236	\$42,310,160	\$86,062,840
Wholesale Trade	\$57,953	\$16,516,458	\$22,796,756	\$39,371,168
Transportation & Warehousing	\$40,149	\$17,424,256	\$12,050,982	\$29,515,386
Retail Trade	\$382,690,176	\$12,666,738	\$46,241,952	\$441,598,880
Information	\$3,425,187	\$24,638,084	\$11,933,224	\$39,996,492
Finance & Insurance	\$111,018,120	\$20,904,730	\$31,564,496	\$163,487,360
Real Estate & Rental	\$77,638	\$42,539,592	\$21,188,638	\$63,805,864
Professional, Scientific & Technical Services	\$121,372	\$44,107,972	\$18,554,940	\$62,784,284
Management of Companies	\$0	\$24,260,856	\$4,999,087	\$29,259,942
Administrative & Waste Services	\$75,135	\$25,869,512	\$9,714,370	\$35,659,016
Educational Services	\$8,643	\$403,134	\$6,215,576	\$6,627,353
Health & Social Services	\$19,353	\$33,740	\$67,518,480	\$67,571,576
Arts, Entertainment & Recreation	\$291,236,896	\$5,465,248	\$6,110,409	\$302,812,544
Accommodation & Food Services	\$194,857,824	\$5,724,814	\$21,380,498	\$221,963,136
Other Services	\$72,884,768	\$11,403,656	\$20,400,688	\$104,689,104
Government & Non-NAICS	\$8,333,997	\$5,129,339	\$53,533,720	\$66,997,056
Institutions	\$441,789	\$0	\$0	\$441,789
TOTAL	\$1,065,657,973	\$322,433,799	\$409,188,686	\$1,797,280,463

¹¹ Employment impact estimates (number of jobs) reflect the mix of full and part time labor that is typical for each sector.

¹² Refer to Section **Error! Reference source not found.** on page 3 for a complete discussion.

Table 8: Value Added Impact by Aggregated Industry and Type of Impact (2007 Dollars)

Aggregated Industry	Direct	Indirect	Induced	Total
Agriculture, Forestry, Fishing & Hunting	\$1,405	\$397,326	\$471,562	\$870,293
Mining	\$95	\$83,659	\$85,344	\$169,099
Utilities	\$47,520	\$8,549,095	\$5,541,462	\$14,138,076
Construction	\$63,096	\$4,136,642	\$1,357,050	\$5,556,787
Manufacturing	\$48,324	\$12,594,103	\$11,649,927	\$24,292,354
Wholesale Trade	\$39,615	\$11,290,023	\$15,582,997	\$26,912,634
Transportation & Warehousing	\$27,594	\$11,227,379	\$6,876,855	\$18,131,828
Retail Trade	\$257,611,408	\$8,312,078	\$30,197,894	\$296,121,376
Information	\$1,531,855	\$12,855,859	\$6,167,314	\$20,555,028
Finance & Insurance	\$79,110,336	\$14,062,628	\$18,349,744	\$111,522,704
Real Estate & Rental	\$51,151	\$29,108,992	\$14,304,347	\$43,464,492
Professional, Scientific & Technical Services	\$79,846	\$26,743,088	\$11,679,196	\$38,502,132
Management of Companies	\$0	\$16,327,874	\$3,364,451	\$19,692,324
Administrative & Waste Services	\$49,367	\$17,263,738	\$6,268,757	\$23,581,862
Educational Services	\$5,485	\$249,417	\$3,919,921	\$4,174,823
Health & Social Services	\$12,734	\$18,975	\$42,687,220	\$42,718,928
Arts, Entertainment & Recreation	\$189,022,912	\$2,425,865	\$3,799,812	\$195,248,576
Accommodation & Food Services	\$105,747,928	\$3,088,441	\$11,192,851	\$120,029,224
Other Services	\$41,744,464	\$6,728,047	\$11,491,579	\$59,964,088
Government & Non-NAICS	\$8,259,982	\$2,796,235	\$42,336,300	\$53,392,516
Institutions	\$0	\$0	\$0	\$0
TOTAL	\$683,455,117	\$188,259,462	\$247,324,581	\$1,119,039,142

Table 9: Labor Income Impact by Aggregated Industry and Type of Impact (2007 Dollars)

Aggregated Industry	Direct	Indirect	Induced	Total
Agriculture, Forestry, Fishing & Hunting	\$698	\$203,840	\$204,674	\$409,212
Mining	\$43	\$31,897	\$32,592	\$64,533
Utilities	\$15,920	\$2,784,492	\$1,917,333	\$4,717,745
Construction	\$53,356	\$3,488,353	\$1,150,680	\$4,692,390
Manufacturing	\$28,952	\$8,324,948	\$7,053,603	\$15,407,502
Wholesale Trade	\$21,778	\$6,206,674	\$8,566,729	\$14,795,180
Transportation & Warehousing	\$23,689	\$9,220,309	\$5,357,616	\$14,601,615
Retail Trade	\$165,779,200	\$4,842,378	\$18,915,028	\$189,536,608
Information	\$1,130,437	\$7,533,162	\$3,079,418	\$11,743,017
Finance & Insurance	\$47,644,952	\$8,341,484	\$11,357,254	\$67,343,688
Real Estate & Rental	\$17,378	\$7,901,882	\$4,303,902	\$12,223,161
Professional, Scientific & Technical Services	\$69,227	\$21,846,606	\$9,426,011	\$31,341,844
Management of Companies	\$0	\$11,957,850	\$2,463,983	\$14,421,833
Administrative & Waste Services	\$41,301	\$13,756,116	\$4,955,902	\$18,753,318
Educational Services	\$4,452	\$224,874	\$3,736,098	\$3,965,424
Health & Social Services	\$11,492	\$14,156	\$37,097,280	\$37,122,928
Arts, Entertainment & Recreation	\$99,496,992	\$1,929,263	\$2,514,510	\$103,940,768
Accommodation & Food Services	\$69,972,392	\$2,047,765	\$7,595,315	\$79,615,464
Other Services	\$29,478,364	\$4,070,123	\$8,550,271	\$42,098,756
Government & Non-NAICS	\$7,724,140	\$1,653,502	\$1,725,992	\$11,103,634
Institutions	\$0	\$0	\$0	\$0
TOTAL	\$421,514,764	\$116,379,672	\$140,004,190	\$677,898,618

Table 10: Employment Impact by Aggregated Industry and Type of Impact

Aggregated Industry	Direct	Indirect	Induced	Total
Agriculture, Forestry, Fishing & Hunting	0	21	14	35
Mining	0	1	1	2
Utilities	0	17	12	29
Construction	1	55	18	74
Manufacturing	0	128	91	219
Wholesale Trade	0	74	103	178
Transportation & Warehousing	0	186	104	290
Retail Trade	5,120	132	514	5,766
Information	12	85	33	130
Finance & Insurance	538	95	126	758
Real Estate & Rental	0	233	124	358
Professional, Scientific & Technical Services	1	309	137	447
Management of Companies	0	91	19	109
Administrative & Waste Services	1	384	142	527
Educational Services	0	6	112	117
Health & Social Services	0	0	695	696
Arts, Entertainment & Recreation	3,088	130	96	3,314
Accommodation & Food Services	3,151	93	363	3,607
Other Services	736	100	309	1,144
Government & Non-NAICS	94	25	23	143
Institutions	0	0	0	0
TOTAL	12,744	2,163	3,035	17,942

ECONOMIC IMPACTS BY COUNTY

Though the economic impacts were simulated in IMPLAN for the entire state, they were also approximated at the county level using the survey data. The distribution of impacts among the 21 counties of New Jersey was done in two steps. First, the impacts were computed at the state level for the following expenditure categories separately:

- Trip related expenditures (as defined in question 22 of the survey), except for expenses related to Fuel for transportation to launch site; and
- Non-trip related expenditures (as defined in question 23 of the survey), along with expenses related to Fuel for transportation to launch site.

The former were assumed to occur in the county of boat trip destination (question 21 of the survey) while the latter were assumed to occur in the county where the boat was kept during the boating season (question 12 of the survey).¹³ Then, the impacts of trip related expenditures and non-trip related expenditures were distributed among the New Jersey counties based on answers to question 21 and question 12 respectively.¹⁴

Table 11 shows the distribution (in percent) of output and employment impacts by county. Coastal counties clearly outweigh inland counties. Ocean and Monmouth in particular represent about 46 percent of output impact.

¹³ Following this breakdown, expenditures occurring in counties of origin amounted to \$1,077,842,452, and expenditures occurring in counties of destination amounted to \$1,027,545,418.

¹⁴ A number of answers to questions 12 and 21 were counties not located in New Jersey (Bucks, Delaware, etc.). These answers were excluded to calculate the county weights.

Table 11: Distribution of Impacts by County

County	Output	Employment
Atlantic	9.3%	9.5%
Bergen	1.6%	1.5%
Burlington	2.9%	2.7%
Camden	1.6%	1.4%
Cape May	8.4%	8.5%
Cumberland	2.7%	2.7%
Essex	0.4%	0.4%
Gloucester	1.6%	1.4%
Hudson	0.4%	0.4%
Hunterdon	2.0%	2.0%
Mercer	1.3%	1.2%
Middlesex	3.2%	3.1%
Monmouth	13.8%	14.1%
Morris	6.0%	6.0%
Ocean	32.1%	32.7%
Passaic	3.6%	3.7%
Salem	1.3%	1.3%
Somerset	1.0%	0.8%
Sussex	5.0%	5.1%
Union	0.7%	0.6%
Warren	1.0%	0.9%

TYPE SAM MULTIPLIERS

Table 12 to Table 15 provide values of the Type SAM multipliers. Note that Type SAM multipliers are defined as follows: (Direct Effect + Indirect Effect + Induced Effect) / (Direct Effect). For instance, an output multiplier of 1.5 means that every dollar of direct spending will yield a total output of \$1.5.

Table 12: Output Multipliers

Aggregated Industry	Multiplier
Agriculture, Forestry, Fishing & Hunting	0.0017
Mining	0.0004
Utilities	0.0212
Construction	0.0092
Manufacturing	0.0808
Wholesale Trade	0.0369
Transportation & Warehousing	0.0277
Retail Trade	0.4144
Information	0.0375
Finance & Insurance	0.1534
Real Estate & Rental	0.0599
Professional, Scientific & Technical Services	0.0589
Management of Companies	0.0275
Administrative & Waste Services	0.0335
Educational Services	0.0062
Health & Social Services	0.0634
Arts, Entertainment & Recreation	0.2842
Accommodation & Food Services	0.2083
Other Services	0.0982
Government & Non-NAICS	0.0629
Institutions	0.0004
TOTAL	1.6865

Table 13: Value Added Multipliers

Aggregated Industry	Multiplier
Agriculture, Forestry, Fishing & Hunting	0.0013
Mining	0.0002
Utilities	0.0207
Construction	0.0081
Manufacturing	0.0355
Wholesale Trade	0.0394
Transportation & Warehousing	0.0265
Retail Trade	0.4333
Information	0.0301
Finance & Insurance	0.1632
Real Estate & Rental	0.0636
Professional, Scientific & Technical Services	0.0563
Management of Companies	0.0288
Administrative & Waste Services	0.0345
Educational Services	0.0061
Health & Social Services	0.0625
Arts, Entertainment & Recreation	0.2857
Accommodation & Food Services	0.1756
Other Services	0.0877
Government & Non-NAICS	0.0781
Institutions	0.0000
TOTAL	1.6373

Table 14: Employment Multipliers

Aggregated Industry	Multiplier
Agriculture, Forestry, Fishing & Hunting	0.0028
Mining	0.0001
Utilities	0.0023
Construction	0.0058
Manufacturing	0.0172
Wholesale Trade	0.0139
Transportation & Warehousing	0.0227
Retail Trade	0.4524
Information	0.0102
Finance & Insurance	0.0595
Real Estate & Rental	0.0281
Professional, Scientific & Technical Services	0.0351
Management of Companies	0.0086
Administrative & Waste Services	0.0414
Educational Services	0.0092
Health & Social Services	0.0546
Arts, Entertainment & Recreation	0.2601
Accommodation & Food Services	0.2831
Other Services	0.0898
Government & Non-NAICS	0.0112
Institutions	0.0000
TOTAL	1.4079

Table 15: Labor Income Multipliers

Aggregated Industry	Multiplier
Agriculture, Forestry, Fishing & Hunting	0.0010
Mining	0.0002
Utilities	0.0112
Construction	0.0111
Manufacturing	0.0366
Wholesale Trade	0.0351
Transportation & Warehousing	0.0346
Retail Trade	0.4497
Information	0.0279
Finance & Insurance	0.1598
Real Estate & Rental	0.0290
Professional, Scientific & Technical Services	0.0744
Management of Companies	0.0342
Administrative & Waste Services	0.0445
Educational Services	0.0094
Health & Social Services	0.0881
Arts, Entertainment & Recreation	0.2466
Accommodation & Food Services	0.1889
Other Services	0.0999
Government & Non-NAICS	0.0263
Institutions	0.0000
TOTAL	1.6082